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Forbidden Fruit: Contested Policy Change, Organizational Resources, and the Teaching of Evolution in Public Schools

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Forbidden Fruit:
Contested Policy Change, Organizational Resources, and the Teaching of Evolution in Public Schools

by

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Professor Margaret Weir, Chair
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Abstract

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For over a century, American religious organizations have waged a battle against scientists and their allies over the idea of human evolution. What began as a dispute about the scientific theory of evolution by natural selection has, over time, developed into a long-running policy conflict over the teaching of evolution and creationism in public schools. At the heart of the matter is a puzzle: Despite a nationwide shift in the policy status quo favoring evolution and two U.S. Supreme Court decisions that placed creationists at a severe institutional and political disadvantage relative to their opponents, what accounts for the ability of creationists to keep the dispute alive and to continue to score policy victories; and conversely, why have scientists and their allies failed to end the conflict? This outcome, called "contested policy change," raises big questions about policy sustainability and the relationship of political and non-political actors to the policy process. Specifically, how can a new policy grow stronger over time, while the winners who advocated for the policy change get weaker, and the losers actually manage to get stronger?

To answer these questions, we must first reconceptualize the conflict in two dimensions. The first dimension is the policy conflict between pro- and anti-evolution organizations. At stake is the question of whether evolution or creationism (in its various forms) should be taught in public schools. The second, often overlooked, dimension is the "ideational" conflict between religious authorities and scientists. Motivating this dispute is the question of how human life began. Both conflicts are being waged by individuals and organizations—political and non-political—which occupy two distinct organizational fields.

In this dissertation, I argue that perpetuation of the policy conflict can only be explained in relation to the battle of ideas. Specifically, creationists were successful because they engaged in the practice of "field bridging," drawing resources from the organizational field associated with the battle of ideas (i.e., "the ideational field") to sustain and advance their policy agenda. Field bridging is a general mechanism of policy change, which can be found in any policy conflict in which non-political actors are major participants. There are three general mechanisms by which field bridging can advance an organization's policy goals. First, organizations can

secure needed material resources from their organizational fields to stay alive and press their policy demands. Second, organizations can supply new ideas to actors in the policy field. Third, organizations can recruit external support from the organizational fields in which they are embedded. In the case at hand, creationists employed all three mechanisms in the wake of their 1960s-era policy defeats. By reframing their policy demands under the banner of "creation science," securing new material resources, and recruiting "creation scientists" and conservative Protestants to the cause, creationist policy activists were able to garner the attention of numerous policy makers during the 1970s and 1980s, while securing a few high-profile victories in several states.

On the other hand, scientists let down their guard after the Supreme Court ruled in their favor in 1968. Although some scientists recognized the growing threat posed by the reinvigorated creationism movement, it would take an entire decade for scientists to begin to organize themselves at the state and local level to challenge creationists in the policy field. Although they eventually found their organizational footing, scientists' most decisive policy victories only came about because of their alliance with church-state separationist organizations, such as the American Civil Liberties Union and Americans United for Separation of Church and State. Despite a second decisive Supreme Court victory in 1987, scientists continue to find themselves fighting a seemingly neverending policy conflict against the organizations of the creationism movement, now operating under the banner of "intelligent design." Until one side or the other is able to conquer the battle of ideas, policy strife is likely to persist.

For my mom and dad.

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LIST OF ABBREVIATIONS

AAAS	American Association for the Advancement of Science
AAUW	American Association of University Women
ACLU	American Civil Liberties Union
AEA	Arkansas Education Association
AHS	American Humanist Association
AIBS	American Institute of Biological Sciences
AJC	American Jewish Congress
ASA	American Scientific Affiliation
AUSCS	Americans United for Separation of Church and State
BSA	Bible-Science Association
BSCS	Biological Sciences Curriculum Study
CFE	Citizens for Fairness in Education
CHC	Christian Heritage College
CoCs	Committees of Correspondence
CR	Christian Right
CRS	Creation Research Society
CSLDF	Creation Science Legal Defense Fund
C-SRC	Creation-Science Research Center
CWA	Concerned Women for America
DGS	Deluge Geology Society
FTE	Foundation for Thought and Ethics
GRI	Geoscience Research Institute
ICR	Institute for Creation Research
ISA	Interfaith Stewardship Alliance
MM	Moral Majority
NABT	National Association of Biology Teachers
NAS	National Academy of Sciences
NCDSE	National Committee for the Development of Scientists and Engineers
NCSE	National Center for Science Education
NEA	National Education Association
NFEC	National Federated Evangelistic Committee
NRC	National Research Council
NSF	National Science Foundation
NSTA	National Science Teachers Association
RSA	Religion and Science Association
SBC	Southern Baptist Convention
SSP	Society for Science and the Public
WCFA	World's Christian Fundamentals Association

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CHAPTER 1: INTRODUCTION

> Teachers are not allowed to teach the Bible in the public schools – why should they be allowed to undermine the Bible under the guise of teaching science or philosophy? I think the principle can be expressed in a sentence, namely, The hand that writes the pay check rules the school.
>
> —William Jennings Bryan[1]

> Who to-day looks back with pride upon those earlier attempts to keep back science by the authority of religion? Or was the cause of religion advanced when men were told that the only way to hold their faith in God was to unite their faith with the belief that the earth is flat and that the sun and the stars revolve around it? Did such teachings help religion in the past, and is there any good reason to think that Mr. Bryan will succeed where his predecessors have failed dismally during four centuries?
>
> —E. A. Birge, President, University of Wisconsin[2]

***

ORGANIZATIONAL AUTHORITY & POLICY CONFLICT

The idea for this dissertation was inspired by Alexis de Tocqueville's *Democracy in America*. An astute observer of American religion, Tocqueville remarked upon the sometimes dangerous relationship between religion and political authority. The American clergy, he wrote "saw that they would have to give up religious influence if they wanted to acquire political power, and they preferred to lose the support of authority rather than to share its vicissitudes" (Tocqueville 2000 [1850], 298-299). In other words, by accepting the general authority of the state, religious groups could go about their business without getting dragged down by the dirty business of politics (Wald 2003, 154). On the other hand, too little religious involvement in public affairs carries its own risks. Most important, religious authority may be undercut if political authority is always allowed to trump religious pronouncements. Religious institutions, in this view, need to assert themselves as the sole legitimate interpreters of divine law if they are to maintain the faith of their own followers (Quinley 1974; Wald 2003, 154).

This project takes these observations and begins with a claim about the nature of American religion: Aside from the institutions of American government, organized religion is the only other American institution that can claim *broad* authority over the beliefs and behaviors of American citizens. As a result, church-state conflicts between religious organizations and

[1] Letter from William Jennings Bryan to John Hylan, Mayor of New York City, 6/12/1923, William Jennings Bryan Personal Papers, Library of Congress, Container# 37.
[2] Letter from E. A. Birge to Rev. Edward S. Worcester, First Congregational Church, Madison, WI, 2/16/1922, William Jennings Bryan Personal Papers, Library of Congress, Container# 35.

government reflect contests over authority. On an abstract level, the contest reflects the timeless battle between religious and political leaders over who should have the legitimate right to rule a population of people. On a more practical level, this battle often unfolds in the United States as a contest over whose rules, or laws, should structure the beliefs and behaviors of individual citizens.

With these observations as a backdrop, this dissertation examines the relationship between religious and governmental authority through the lens of a single recurring policy conflict—the teaching of evolution in public schools. This case presents an interesting study of the dynamics between religious organizations and the policy process. Policy conflicts are not always fought in a single organizational field by political actors. Sometimes non-political organizations can be party to a policy dispute, introducing a wide variety of motivations and resources to keep the conflict alive long after other types of actors might have moved on to another cause.

Further, this dissertation examines the relationship between the organizational fields of religion and science, the members of which have been fighting a "battle of ideas" for centuries—over such questions as the age of the earth, the position of the earth relative to the rest of the universe, and the origins of humankind. Like their religious counterparts, scientists possess similar motivations to challenge anyone who casts doubt on their authority to generate new knowledge. How these two perennial foes reacted to the contention that humankind evolved from lower species is the subject of this dissertation. As we'll see, the organizational dynamics that underlie both religion and science can reveal much about the ability of non-political organizations to contest new policies, even in the face of overwhelming obstacles.

THE EVOLUTION-CREATIONISM CONFLICT

Since the early 1900s, American policy makers have been engaged in a seemingly timeless and unending conflict over the teaching of evolution in public schools.[3] The controversy first garnered the attention of politicians during the 1920s when "anti-evolutionists"—led by William Jennings Bryan—launched a social movement that succeeded in garnering the attention of numerous state policy makers on the question of whether evolution should be taught in taxpayer-supported schools. Over a period of several years, the movement secured governmental attention to its issues in a number of state policy venues, and it even succeeded in banning the teaching of evolution in three states (Larson 2003; Lienesch 2007).

[3] Numerous excellent works have been written about different aspects of the evolution-creationism conflict. Larson (2003) provides the best general history of the controversy, with an emphasis on the court battles that both sides have waged. Lienesch (2007) offers a concise history of the creationism movement during the 1920s and their efforts to ban evolution in many states. Larson (1997) tells the story of the famous "Scopes Trial" of 1925, in which the newly-established American Civil Liberties Union attempted, but failed, to overturn Tennessee's ban on the teaching of evolution. Numbers (1986, 2006) provides the definitive work on the history of creationism, going into significant detail about the origins of the idea and the organizations that helped sustain and reinvent the idea over time. Nelkin (2000) focuses on the so-called "scientific creationists" of the modern era of conflict, chronicling their efforts to push for the inclusion of creation science in public school textbooks. Finally, Forrest and Gross (2007 [2004]), provide a detailed examination of the so-called "wedge strategy" of intelligent design, leading up to the 2005 U.S. district court ruling in Dover, Pennsylvania, which ruled unconstitutional the teaching of intelligent design in public schools.

By the end of the decade, the evolution issue began to fade from the agendas of state and local governments. In nearly every state in which creationists attempted to ban evolution, they failed to achieve their goal. Moreover, even though they successfully defended Tennessee's anti-evolution law in the famous Scopes "Monkey Trial," they emerged from that episode badly discredited within American elite society (Larson 1997, 232-233). Creationists of the 1930s were thus faced with a seemingly dead movement. After the last bill of the 1920s died in the Texas legislature in 1929, it would be 30 years before another bill would be introduced (Lienesch 2007, 200).

During the intervening years, anti-evolutionists did not die out. Rather, they used the time to build an institutional infrastructure and to support "scientific" research that might prove the veracity of Genesis, the Bible's opening chapter (Lienesch 2007, 198; Numbers 1986, 404-406, 2006). Additionally, fundamentalist Christians successfully pressured publishers to keep evolution out of most high school biology textbooks, and those books that did mention evolution tended to sell poorly (Grabiner and Miller 1974, 835). The result of their efforts, according to historian Ronald Numbers, was that "Darwinism virtually disappeared from high school texts, and for years many American teachers feared being identified as evolutionists" (Numbers 1986, 403).

By the late 1950s, the policy status quo began to change, as the Soviet Union's successful launch of Sputnik set off a chain reaction of events that would lead to the reemergence of evolution as an issue for governmental attention. Sputnik was a wake-up call to American national policy makers, who quickly realized that they would have to begin paying serious attention to science education in order to compete with the Soviet Union (Riddle 1959; Smith 1990). Although science-education reform efforts were already underway prior to Sputnik, those reforms proceeded at an accelerated pace after its launch (Mayer 1986, 485). To that end, the Biological Sciences Curriculum Study (BSCS) was created in 1958 with funding from the National Science Foundation. Comprising both professional biologists and science educators, the BSCS committee forged an agreement on the core themes that should be included in any standard biology text. In 1963, three BSCS textbooks were published for commercial use. Each book adopted a different approach to the study of biology, but all included evolution as a core concept. A few years after their publication, these textbooks were in use by 50 percent of American high school students, and sensing new commercial opportunities, other publishers soon began copying the books' content and format (pp. 488-490). The result, according to BSCS Director William Mayer, was that "[t]he teaching of organic evolution became widely respectable. Even the word 'evolution,' once cloaked in disguise, reappeared in other textbooks, even though the concept and the evidence were not treated as extensively as in the BSCS texts" (p. 490).

Concurrently, teachers began to challenge the anti-evolution laws that were passed during the 1920s (Larson 2003, 98-119; Lienesch 2007, 205; Moore 1998; Wilhelm 1978, 220-223). These actions, coupled with the changes initiated by the BSCS, led to the remobilization of creationists and their allies and the resumption of the public conflict over the teaching of evolution in public schools. Then, in 1968, the balance of power seemed to shift away from creationists, as the Supreme Court ruled that the state of Arkansas's ban on the teaching of

evolution was unconstitutional (Lienesch 2007, 205-206). Over 40 years since the beginning of the evolution-creationism policy conflict, the battle appeared to have been won by scientists and their allies. As we now know, however, the 1960s were just the beginning of a new period of policy conflict that continues to this day, with no end in sight.[4]

ARGUMENT AND RESEARCH QUESTIONS

Using the evolution-creationism conflict as a historical case study, this project examines the organizational factors that promote policy conflict and prevent a lasting solution from being attained. At the heart of the matter is an empirical puzzle: Despite policy successes on both sides of the controversy, why has neither side been able to consolidate its victories to permanently end the conflict? The puzzle deepens when one considers that the U.S. Supreme Court has dealt creationists two significant defeats,[5] placing them at a severe institutional disadvantage relative to their opponents. Given these developments, what accounts for the ability of creationists to keep the dispute alive and to continue to score policy victories; and conversely, why have pro-evolution scientists and their allies failed to end the conflict?

In brief, the policy conflict persists because neither side has been able to win the corresponding "battle of ideas," a distinct conflict over one of the most vexing questions human beings have attempted to answer: "Where did we come from?" The battle of ideas is not simply a debate among policy makers. Rather, it is a separate organizational conflict created in the wake of the publication of Darwin's *On the Origin of Species*. Darwin's novel idea was that human beings were not created in their present form but, rather, evolved from lower species by a process of "natural selection." For religious individuals and organizations, these scientifically-derived ideas contradicted the biblically-based idea that human beings were created directly by God.

Darwin's theory thus sparked two inter-related "private" conflicts[6]: the well-known fight between scientists and religious institutions over the veracity of Darwin's theory and, just as important, a fight within Christianity over the theological consequences of Darwin's ideas (Gregory 1986; Szasz 1982). Although many religious institutions eventually came to terms with the idea of evolution—adapting their theologies to be more consistent with scientific findings—many did not. Consequently, during the 20th century, American Protestantism would undergo a deep and divisive transformation, in which traditionalists who opposed evolution (and other modern religious ideas) decided to split from their religious denominations rather than change their beliefs (Szasz 1982; Wuthnow 1988).

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[4] In a 2008 report, the National Science Foundation characterized the state of the evolution-creationism controversy as follows: "[D]espite endorsements of evolution from [the American Association for the Advancement of Science, the White House Office of Science and Technology Policy, the National Academy of Sciences], and other representatives of the scientific and political establishment, controversy over how evolution should be taught in public schools remains a perennial feature of American life and shows no sign of disappearing. Instead, the controversy is evolving" (Bell 2008, Ch. 7, 22).

[5] See *Epperson v. Arkansas 393 U.S. 97* and *Edwards v. Aguillard 482 U.S. 578*.

[6] The term "private" is synonymous with "non-public." Private conflicts are those involving individuals and groups in society that are not mediated by government institutions. Public conflicts, on the other hand, are those in which individuals and groups take their grievances to a government institution (i.e., an executive, legislative, or judicial body) to be resolved. This distinction builds upon Schattschneider's (1960) distinction between "private" and "socialized" conflicts.

There is no inherent reason why a private conflict should become public (Schattschneider 1960). Indeed, the battle of ideas might have remained confined to the private sphere throughout history had it not been for a momentous change that coincided with the changes happening in American Protestantism. As secular public schools began to replace sectarian schools across the country (Beyerlein 2003; Thomas, Peck, and Haan 2003), religious groups seized the opportunity to bring their previously private conflict to the attention of public policy makers. Whereas the battle of ideas invoked the question, "Where did humankind come from?" the new policy conflict invoked the question, "Should government take sides or remain neutral in the battle of ideas?" The 1920s-era policy battles would come down on the side of either neutrality or opposition to evolution, but subsequent periods of policy contestation would move the status quo toward near universal support for the teaching of evolution in public schools.[7] Consequently, public school districts in the United States are now faced with the curious situation in which the policy conflict over the teaching of evolution has been largely settled in favor of scientists and their allies, while the underlying battle of ideas remains unresolved and occasionally provides the fodder for new policy skirmishes.

As described in the next chapter, this phenomenon is a case of "contested policy change," in which the policy status quo has changed significantly from the prior period, but the winning groups do not use the opportunity to strengthen the organizational dimension of their cause. This outcome raises a number of questions concerning the evolution-creationism controversy, which this project will seek to resolve: Why hasn't the "losing" side in the policy debate simply faded away over the years? Why has the "winning" side failed to prevent its opponents from reorganizing and initiating new policy fights? How has the temporally-prior battle of ideas helped perpetuate the policy conflict? What can this debate reveal about the relationship of non-political organizations to the policy process and the factors that sustain them over time?

Although prior research can shine light on different pieces of the puzzle, most such studies are ill equipped to answer questions about long-term policy conflict in which the losing side—in the face of repeated and seemingly decisive defeats in the policy field—remains organized and mobilized to fight another day. What is needed is a more explicit theoretical framework in which organizations are the central actors. By examining the resources and motivations that sustain such organizations in their interactions with the policy process, one can begin to map out the distinctive "rules of the game" that influence organizational behavior across multiple (public and private) fields.

As described in Chapter 2, many studies of policy sustainability are based upon theories of collective action, which attempt to explain why groups form, what sustains them over time, and what makes certain groups more influential than others in effecting political outcomes (e.g.,

[7] Berkman, Pacheco, and Plutzer (2008, 921) report that all states "recognize, at least to some degree, the importance of evolutionary theory. At this time [May 2008], not a single state uses its content standards to explicitly promote ID [intelligent design] or creationism." Likewise, in a historical study of high school biology textbooks, Skoog (2005) found that, since the 1990s, all states include comprehensive treatment of evolution in their textbooks. Of course, just because a state enacts a policy doesn't mean that it will be implemented uniformly across local jurisdictions or that the policy will be followed by teachers in the classroom. Nevertheless, as a matter of official state-level policy, the teaching of evolution is now a basic component of secondary schools' biology curricula throughout the country, and that fact alone is a significant achievement for the supporters of evolution.

Dahl 1964; Olson 1965; Polsby 1980 [1963]; Truman 1971 [1951]; Walker 1991; Wilson 1973). Collective action theories have yielded tremendous insights into the factors that facilitate the emergence and persistence of political groups and organizations, but—because of their orientation toward electoral politics and policy making—these theories fall short in their ability to explain the circumstances under which non-political groups and organizations choose to engage the policy process.[8] The political orientation of theories of collective action is convenient because it allows scholars to build theory based upon a relatively simple model of organizational behavior, but I argue that the assumption breaks down in all policy conflicts where non-political organizations are major actors. In the case at hand, the policy conflict is actually a secondary dispute to the battle of ideas that is being waged among religious organizations and between religious organizations and scientists. By focusing on the distinctive characteristics of the organizations that are party to the battle of ideas, I develop a more convincing explanation of the longevity of the policy conflict in the case at hand. Organizations matter not simply because of the internal goals that motivate them to engage the public policy process, but also because of the myriad forms of resources they are able to draw upon to sustain themselves over time.

In the following chapter, I develop an organizational theory of policy change, which provides the best analytical tools to explain the longevity of policy conflicts in which non-political organizations are the primary actors. I then develop a three-chapter historical narrative to trace developments in both the ideational and policy fields associated with the evolution-creationism controversy. Using primary sources—including the personal papers of William Jennings Bryan, government reports, and communications between scientists—I demonstrate how organizational leaders on both sides of the debate have managed to draw resources from two distinct organizational fields to keep the fight alive.

Additionally, I provide strong evidence that the perpetuation of the battle of ideas is rooted in organizational authority. On one side, religious organizations lay claim to the beliefs of their members, asserting that only religious leaders and sacred texts possess the authority to provide knowledge about the natural world. On the other side, scientists lay authoritative claim to the process by which knowledge is generated and refined. When disputes arise over knowledge-related questions, such as the origins of human life, both scientists and religious organizations have a powerful incentive to press their own claims of authority. Anything less than direct engagement risks undermining each side's authority over its adherents.

[8] I elaborate on this claim in Chapter 2.

CHAPTER 2: LITERATURE REVIEW & THEORY

> Political conflict is not like a football game, played on a measured field by a fixed number of players in the presence of an audience scrupulously excluded from the playing field. Politics is much more like the original primitive game of football in which everybody was free to join, a game in which the whole population of one town might play the entire population of another town, moving freely back and forth across the countryside. Many conflicts are narrowly confined by a variety of devices, but the distinctive quality of political conflicts is that the relations between the players and the audience have not been well defined and there is usually nothing to keep the audience from getting into the game.
>
> —E.E. Schattschneider (1960, 18)

***

WINNERS, LOSERS, AND CONTESTED POLICY CHANGE

Following Schattschneider's classic dictum that "[n]ew policies create a new politics" (1935, 288), we can begin to unpack the political dynamics that were set in motion when the teaching of evolution became a concern of policy makers during the early 20th century. The basic idea behind Schattschneider's observation is that new policies have the potential to produce a reshuffling of organized interests. The "winners" are generally strengthened by the policy outcome, emerging as the primary constituency and the privileged beneficiary of the new policy. The "losers," on the other hand, "adapt themselves to the new conditions imposed upon them, find themselves without means to continue the struggle, or become discouraged and go out of business" (Schattschneider 1935, 288). The implication is that policies adopted at one point in time can shake up the political landscape, potentially affecting future rounds of policy contestation.

For scholars who follow in Schattschneider's footsteps, the study of policy development requires more than just a short-timeframe analysis of the moments surrounding a policy victory. Rather, the most revealing part of any policy development story often occurs in the months and years both before and after a policy is enacted (Pierson 2005). On the tail end of any policy development story, what happens *after* a policy is enacted? Do losing groups simply die out, allowing the new policy to take effect without further challenge, or do they remobilize to fight another day? Do winning groups stay mobilized, reorganize, or countermobilize to fend off new attacks? Is the new policy status quo robust, or does it remain vulnerable to future challenges? Does the new policy grow more sustainable over time, or does it eventually unravel through incremental changes or outright repeal?

Although there is no simple method to predict the degree to which a new policy will result in future political conflict, scholars have attempted to translate Schattschneider's somewhat simple observation into a more comprehensive analytic framework. The approach

begins by assuming that a winning policy and its supporters tend to enjoy certain advantages that accrue to them over time (Pierson 2000a; Thelen 2000).[9] But despite these advantages, simply being on the winning side of a policy victory is not always sufficient to ensure a group's long-term advantage over losing groups and emergent competitors. As important is whether or not *winning groups* are able to generate "positive feedback," thereby strengthening their position in the policy field for future rounds of contestation (Thelen 2000, 103). Likewise, the ability of a new *policy* to generate positive feedback is critical to its long-term sustainability, especially in the face of continued opposition (Pierson 1993, 2000a, 2000c).

Positive feedback, also known as path dependence, is a self-reinforcing process in which political and institutional dynamics "triggered by an event or process at one point in time reproduce and reinforce themselves even in the absence of the recurrence of the original event or process" (Pierson 2003, 195).[10] The implication is that in the immediate aftermath of a policy victory, there may be multiple potential outcomes, but as time goes by, the new policy can become attached to a particular outcome, making major policy change increasingly difficult (Pierson 2000a, 75). As Pierson (2000a, 78-79) argues, path dependent processes should be fairly prevalent in politics and policy making. For one thing, institutions, once established, "generate powerful inducements that reinforce their own stability and development" (p. 78). Furthermore, collective action—a prominent feature of the political process—should also promote positive feedback (p. 78). Successful mobilization often requires high startup and coordination costs. When groups are able to overcome those barriers, then we should expect them to have a strong advantage over competing groups that lack comparable levels of motivation and resources. Additionally, such highly mobilized groups may benefit from the new policies, lending further support to their already strong cause. Conversely, disadvantaged groups may become increasingly unable to compete, as new policies undercut their mobilization efforts.

Therefore, the degree to which a policy conflict persists across time depends upon the ability of both the winning policy and its supporters to generate positive feedback. In order to secure their victories over the long term, winning groups must be able to fight back attempts to alter the new policy status quo, while strengthening any newfound organizational advantages in the policy field. Losing groups—in order to remain engaged—must reorganize or sustain themselves after the initial loss, develop new policy ideas, and prevent their opponents from becoming organizationally dominant. And all of this takes place in the context of a new policy status quo, which has the potential to add further complexity to the resulting group dynamics.

Using this framework of winners and losers, we can envision four possible long-term outcomes after a new policy is enacted. Table 1 categorizes each outcome using two positive feedback variables: (1) whether or not the policy changes were consolidated into a stable new status quo over time and (2) whether or not the winning groups were able to strengthen their organizational resources to mitigate future challenges by their opponents.[11] The resulting four

[9] Thelen and Pierson talk about "first arriving" policies and groups. First arrivers are the same as "winners" in my categorization.

[10] Pierson credits Stinchcombe's discussion of "historical causation" for this insight. For further elaboration, see Pierson's numerous other works on path dependence and positive feedback (Pierson 1993, 2000a, 2000b, 2000c, 2003, 2004, 2005).

[11] In order to simplify this discussion, I treat positive feedback as a dichotomous variable. In reality, the consolidation of policy changes and group strength is probably best characterized as a continuous variable, with

categories correspond to four types of cases, which we can use to situate the case at hand in relation to other examples of long-term policy change and conflict. The top row of Table 1 (categories A and B) includes cases in which policy changes are *sustainable* over time and characterized by a permanent and substantively significant shift away from the previous policy status quo. Consequently, cases of type A and B are best characterized as examples of enduring policy *change*. In contrast, the bottom row (categories C and D) includes cases in which a newly adopted policy is *unsustainable* over time and characterized by prolonged or repeated periods of conflict with little or no change in the previous policy status quo. Cases of type C and D are thus best described as examples of enduring policy *conflict*. Turning to the second variable, the rightmost column of Table 1 (categories B and D) includes cases in which winning groups are unable to consolidate their gains after the initial policy enactment, because they are unable to strengthen the organizational resources of their cause. In contrast, the leftmost column (categories A and C) includes cases in which winning groups do succeed in consolidating their victory. In short, the difference between the two columns comes down to a question of organizational strength: How easily are winning groups able to remobilize when old or new opponents (re-)organize in opposition to the new policy status quo?[12]

Table 1. Typology of long-term policy conflict outcomes.

		Winning Groups Strengthen Organizational Resources? (Positive Feedback)	
		Yes	**No**
Consolidation of Policy Changes? (Positive Feedback)	**Yes**	**A** **Solidified Policy Change**	**B** **Contested Policy Change**
	No	**C** **Organized Policy Conflict**	**D** **Unsettled Policy Conflict**

Sustainable

Unsustainable

As I argue below, the evolution-creationism case is an example of "Contested Policy Change" (type B), in which the policy status quo has changed significantly from the prior period, but the winning groups do not use the opportunity to strengthen the organizational dimension of their cause. This case can be contrasted against cases of "Solidified Policy Change,"[13] in which policy changes are sustainable over time and the winning groups emerge organizationally strengthened by their victory; "Unsettled Policy Conflict," in which policy changes are eventually unraveled and winning groups continue to battle their opponents across policy venues;

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positive feedback unfolding by degrees over a period of time. This typology merely serves as a heuristic to situate the evolution-creationism case in relation to similar cases in the literature.

[12] Of course, easy remobilization is not a guarantor of success in preventing changes to the new policy status quo, but it can make it more difficult for opponents to get their way in the face of a serious challenge.

[13] Thanks to Todd La Porte for suggesting the label for this category.

and "Organized Policy Conflict," in which policy changes are undone over a short timeframe, but not before winning groups are able to strengthen the organizational dimension of their cause.

Although the early years of the evolution-creationism controversy resemble a case of "unsettled policy conflict,"[14] this project is principally concerned with sustainable policy change. The concept of sustainable policy change builds upon Patashnik's analysis of the sustainability of general-interest reforms (Patashnik 2003, 2008). The most sustainable reforms, he argues, are those in which winning groups are able to consolidate their advantages after the initial victory, through "the generation of reliable allies and the weakening of enemies" (Patashnik 2008, 30). The more that winning groups are able to reconfigure the underlying political dynamics of a policy field, the greater the likelihood that the new policy will take hold and resist attempts to be undone.

Although Patashnik's explanation for the sustainability of general-interest reforms is convincing, his argument assumes that, in order to assure the long-term success of a new policy, winning groups must actively work to keep it alive—by strengthening their own organizations, forging alliances, and weakening their opponents. But is it necessarily true that the sustainability of *any* new policy depends upon the ability of winning groups to consolidate their victory and generate positive feedback for their cause? Patashnik makes a convincing argument for the numerous cases of general-interest reform that he investigates, but the case of evolution presents a challenge to the general applicability of his argument. Although individual policy skirmishes over the teaching of evolution often mimic the characteristics of an enduring policy *conflict* (categories C and D of Table 1), if we view the controversy over a longer time horizon, it is clear that there has, in fact, been a permanent and substantively significant shift away from the previous policy status quo.[15] This distinction is critical because it places the case of evolution squarely in the universe of cases considered by Patashnik.[16] But unlike the successful cases of

[14] As I discuss in Chapter 3, anti-evolutionists actually secured the early advantage in the policy dispute, by banning the teaching of evolution in three states, but although those state-level policy changes remained in effect until the 1960s, the laws did not have any practical effect on the national policy status quo. Because evolution was largely ignored by public schools and textbooks until the 1960s, the prohibitions merely codified the extant state of affairs. Moreover, despite these few policy victories, anti-evolutionists actually failed in most states where they sought to ban the teaching of evolution during the 1920s, and by the end of the decade, their reputation had taken a significant beating, with the organizational dimension of their cause nearly dead (Lienesch 2007).

[15] See fn 7. Because of the positive policy feedback resulting from the federal Biological Sciences Curriculum Study and the gradual incorporation of evolutionary theory in more and more textbooks, the teaching of evolution is now, arguably, the universally accepted policy of state departments of education throughout the United States. I expand this argument in the following chapters.

[16] I argue that the teaching of evolution in public schools is comparable to the "general-interest reforms" analyzed by Patashnik. According to Patashnik (2008, 16), a "general-interest reform" or a "policy reform" is a "conscious, non-incremental shift in a preexisting line of policymaking intended to produce general benefits." On its face, this definition is consistent with my characterization of policy change developed in this chapter, but the concept of "general benefits" requires further elaboration. Following David Mayhew, Patashnik notes that the production of general benefits can be achieved in two ways: through governmental redistribution of wealth from a small group to a much broader segment of society, or from policies that "increase the size of the pie" for everyone (p. 18). Although Patashnik's conceptualization of general benefits is based largely on economic and administrative benefits, I argue that "knowledge" is also a type of general benefit. At its most basic level, the battle over the teaching of evolution in public schools, like other science-related policy battles, is about the redistribution of knowledge (and the authority to generate new knowledge) from a set of special-interest groups (i.e., religious organizations) to the public at large. As such, this case has many of the same characteristics and group dynamics as the cases studied by Patashnik.

policy sustainability documented by Patashnik, the "winning" groups in the evolution-creationism controversy (i.e., scientists and science educators) played only a supporting role in bringing about the new policy status quo and in securing its long-term sustainability. At the same time, the "losers" of the policy battle (i.e., creationists) have not gone away. Instead, they have found new ways to pursue their agenda, while fighting to roll back the gains of their opponents. Most surprising, creationists actually managed to *grow* the organizational dimension of their cause following their 1960s-era policy defeats.

It is clear that a second dimension of positive feedback is needed to draw a distinction between the case being studied in this dissertation and the cases considered by Patashnik. To that end, categories A and B of Table 1 both deal with sustainable policy change, but they differ with respect to the ability of winning groups to generate positive feedback for the organizational dimension of their cause. If this case simply involved a set of political interest groups on both sides of the debate, scientists and their allies may have actually succeeded in winning the debate by now. After all, scientists often enjoy a privileged place in the policy process on a wide range of issues (Keller 2001). But as discussed above, this case is really two conflicts masquerading as one: the policy conflict over the teaching of evolution and a conflict of ideas over the question of human origins. By failing to recognize the dual nature of the conflict, scientists and their allies failed to appreciate the ability of their opponents to keep the dispute alive.

This situation raises two puzzling theoretical questions: First, how might the losers of a policy conflict grow stronger over time, despite an ever increasing number of institutional disadvantages stemming from the initial policy enactment? Second, if the winners of a policy conflict never succeed in strengthening their position vis-à-vis their opponents, then how can a new policy become sustainable over time? The answer to the first question requires an understanding of the factors that sustain organizations over time. In most cases of policy conflict, the battle is often waged by dueling sets of *political* organizations, which claim to represent broader constituencies of the American public. In the case of evolution, however, the "losers" in the policy battle were not simply the special-interest political organizations created to battle evolution, but also the numerous religious organizations and other specialized creationist organizations directly engaged in the battle of ideas. As I will demonstrate in this study, their presence in the dispute enabled both the losing organizations (and the losing ideas) to stay alive, thwarting any attempt by scientists to secure their victory.

The answer to the second question requires an understanding of strategic alliances. The courts have been utilized by both sides of the dispute as a potent policy weapon since the beginning of the controversy, and the two Supreme Court cases in 1968 and 1987 have done more to influence the outcome of the overall policy conflict than any other single policy victory. If not for the alliance that scientists and science educators formed with "church-state separationist" groups, such as the American Civil Liberties Union (ACLU) and Citizens United for Separation of Church and State, those Supreme Court cases might never have happened, or they could have resulted in rulings favoring creationism, rather than evolution. As in the story of how the losing organizations managed to keep the fight alive, organizations on the winning side were critical to ensuring the long-term sustainability of the nationwide policy changes favoring evolution. But surprisingly, the most consequential winning organizations were not those with the most to gain from the widespread adoption of evolutionary curriculum (i.e., scientists and

science educators), but those with the most to lose from religious organizations gaining increased influence over governmental decision making in public schools (i.e., church-state separationists).

SHORTCOMINGS OF COLLECTIVE ACTION THEORY

Whether seeking to explain the organizational longevity of the losers or the policy success of the winners, it is clear that a better understanding of the organizational dynamics of each side is needed. On the losing side, why were creationist and religious organizations able to continue the fight for so long despite significant losses in the policy field? On the winning side, why were certain organizations more consequential than others, and what does that foretell about the ability of scientists, science educators, and their allies to decisively win both the policy conflict and the battle of ideas?

Scholars of politics have long recognized the importance of groups and organizations in American politics. Whether one is talking about pressure groups, interest groups, advocacy organizations, social movement organizations, or political parties, the groups and organizations typically studied by scholars of politics all share one common feature: an orientation toward the political process that centers around policy advocacy or electoral mobilization. Although such scholars acknowledge that political groups exist in varying degrees of formal organization (e.g., Schattschneider 1960, 28; Truman 1971 [1951], 36-37), rarely do they employ explicitly organizational variables to explain political outcomes. Instead, studies examining the influence of political organizations tend to be rooted in theories of collective action.

The study of collective action has attempted to answer some of the most fundamental and vexing questions in political science: Why do groups form, what sustains them over time, and what makes some groups more influential than others in effecting political outcomes? In his foundational study of political interests and public opinion, Truman (1971 [1951]) argued that "interest groups" tend to coalesce around one or more shared attitudes in order to make behavioral claims upon other groups in society. Truman's group theory of politics would launch a generation of scholars of "pluralism," whose central assertion was that power is not concentrated among the elite in society, but is fragmented among different groups vying for power (Dahl 1964; McFarland 2004; Polsby 1980 [1963]).

Despite the success of pluralism, Truman's theory also launched a long line of critics, who argued that individuals rarely organize into groups without a variety of incentives to overcome their free-riding tendencies (Moe 1981; Olson 1965; Walker 1991; Wilson 1973). The most enduring criticism was offered by Olson (1965), who argued that collective action requires more than just a mutual desire among individuals to effect change. More important, collective action is facilitated by three factors: (1) interactions within small groups (e.g., peer pressure); (2) coercion; and (3) selective incentives (i.e., monetary, social, and psychological benefits over and above the goods that can be attained from working collectively).

Despite (or, perhaps, because of) the elegant simplicity of Olson's theory, later scholars would find it lacking it its ability to account for the diverse assortment of groups observed in the real world. Bridging the divide between Truman and Olson, Moe (1981) argued that individuals may join groups not only because they believe they can make a difference or because they stand

to gain financially; they also join for social and "purposive" reasons (e.g., friendship, status, and ideological, moral, or religious principles). Purposive incentives, Moe argued, are the most relevant to the study of politics, because they can explain why large groups form and thrive over long periods of time, despite few economic means at their disposal. Finally, Walker (1991) argued that modern interest groups have become increasingly dependent upon benefactors outside their membership for both group initiation and long-term maintenance. In other words, without outside resources, many political organizations simply lack the means (economic or otherwise) to survive.

Clearly, the study of collective action has produced important insights into the dynamics of the political system, but the underlying explanations of group formation and maintenance often seem incomplete when analyzed in the context of the policy process. In the next three subsections, I consider three shortcomings of collective action theory vis-à-vis the policy process that are evident in this study.

The Religious Factor

First, collective action theory argues that purposive incentives are important to the creation and maintenance of certain types of groups, but it offers little insight into the balance of economic and non-economic incentives that are required to sustain a group in the face of policy setbacks. A well-financed group with strong religious convictions (a type of purposive incentive) could perpetuate a policy conflict as long as there are voters and policy makers willing to listen to the group's demands, but what does a group with a lot of religious zeal, but few economic means, decide to do when faced with a major policy defeat? The choice becomes even more difficult to predict when the group's primary mission is religious—not political—and the perpetuation of conflict would require the diversion of resources away from that mission.

Religious groups and organizations have been grappling with this quandary since the founding of the United States: get too involved in political matters and "forfeit the hope of reigning over all" (Tocqueville 2000 [1850], 297), or don't engage, but risk becoming irrelevant to one's followers (Quinley 1974, 2). It's no surprise, therefore, that the history of religious engagement in public affairs reveals a complicated picture. Religious beliefs can be a potent force in American politics (Beyerlein and Hipp 2006; Campbell 2004; Wald, Owen, and Hill 1988; Wilcox and Larson 2006), but strong religious beliefs alone are not sufficient to predict political action by a religious organization (Wald, Silverman, and Fridy 2005). In the case at hand, we cannot simply assume that religious beliefs about the origin of humankind were enough to sustain religious organizations in the face of policy setbacks. Instead, we need a more complex account that can explain the balance of economic and non-economic resources that helped sustain them through tough times, and we need an account that can differentiate between different types of religious organizations and the role that each played in keeping the policy conflict alive over time.

Alliances

Second, collective action theory argues that alliances with outside benefactors can provide groups with critical resources to pursue their policy goals, but it tells us little about the

impact of such alliances on the dynamics of the larger policy conflict. Although an alliance may serve short-term policy objectives (Ganz 2000; Soule 2004; Soule and Olzak 2004; Zald and McCarthy 1987), it can also produce unintended consequences over the long run. Most significant, demands by allies may require groups to reprioritize their goals and interests to be more in line with their new partners (Weir 2006).[17]

In the case at hand, we need to disentangle the complex interplay among scientists, science educators, and church-state separationists to explain why they managed to be so successful at winning the major policy contests (especially in the judicial domain), but so unsuccessful at ending the larger conflict. To what extent did the alliance help them achieve their short-term policy objectives, and in what ways has the alliance hindered their ability to put their opponents out of business. On the other side, we need to explain how the alliance among creationists, religious organizations, and (later) the Religious Right helped creationists weather their policy defeats, and at what cost to the long-term success of their cause?

Positive Feedback

Third, theories of policy feedback, which rest upon collective action theory, argue that new policies have the potential to create institutional advantages for the winners of a policy dispute. In turn, these advantages can facilitate the perpetuation of collective action and strengthen winning groups over the long run through a positive-feedback mechanism (Pierson 2000a, 78). Although the logic of the theory is sound, its simple assumption about the ubiquity of collective action makes it difficult to specify the conditions under which new policies promote the perpetuation of collective action among some groups but not others. Do all of the winning groups need to remain organized and/or mobilized following a policy victory, and for how long? What are the conditions under which losing groups either go out of business or countermobilize in opposition to the new status quo? After all, new policies don't always make the loser go away but can have the opposite effect, producing full-scale countermovements that keep alive the original losing groups while mobilizing previously disinterested individuals (Andrews 2002; Meyer and Staggenborg 1996; Soule and Olzak 2004; Zald and Useem 1987).

In the case at hand, we need a more complex account of policy feedback that can explain why the Supreme Court's pro-evolution ruling in 1968 led to the virtual demobilization of scientists and their allies (the ostensible winners of the dispute), while provoking such a strong countermovement backlash among creationists and their supporters (the losers)—the exact opposite of what we might expect to observe in a case of enduring policy change. Further, when some scientists tried to remobilize in the late 1970s in opposition to the reinvigorated creationism movement, they encountered substantial barriers to collective action (Park 2000). Although they were eventually able to organize an effective opposition to counter their opponents, the case suggests the need for a more nuanced explanation of policy feedback, which can account for the

[17] For example, in order to become more politically relevant, the organizations of the Christian Right had to change their modes of political engagement in order to become more like "typical" insider political interest groups. Likewise, the Republican Party, in order to win the support of the Christian Right, has had to embrace new religious interests over the years that were not traditionally part of the party's platform. This change in the organizational interests of both the Republican Party and the Christian Right has, in turn, influenced the nature of the policies that both entities are willing and able to contest in the public sphere (Moen 1992, 1994, 1996; Oldfield 1996).

competing demands of groups involved in the policy fight and the complexities of trying to move alliance partners toward a common policy goal. Positive feedback among winning groups does not happen automatically; it is a complex process that requires multiple organizations, each with its own mission and resource demands, to negotiate a common path forward. Nor should losing groups be counted out of the fight. Policy victories for the winning side can create opportunities for losing groups to reinvent themselves with new ideas, and the new policy status quo can provide a concrete rallying point for mobilization.

AN ORGANIZATIONAL THEORY OF POLICY CHANGE

Without some recognition of the diverse organizational forms engaged in the policy process and the complex environments in which they operate, theories of collective action will always fall short in explaining variance in group outcomes in response to policy success and failure. What is needed is a theoretical framework that can adequately characterize the different types of groups and organizations involved in the dispute, properly situate them in relation to the policy process, and induce a set of general factors to explain their behaviors in the policy field. To that end, organizational theories offer the best corrective to theories of collective action.

Although I have used the terms "group" and "organization" interchangeably to this point, I argue that theories of policy change and conflict are better served by conceptualizing actors as organizations, rather than groups. Following the influential political scientist Herbert Simon, an organization can be defined as "the pattern of communications and relations among a group of human beings, including the processes for making and implementing decisions" (Simon 1997 [1945], 18-19). In larger organizations, this "pattern" leads to the development of formal structures that facilitate communication among members of the organization and specify lines of authority (Downs 1967; Simon 1997 [1945]; Thompson 1967). But organizations are more than just a collection of formal rules that specify the roles and relations among individual members; they are also systems of cooperation (Barnard 1968 [1938]). Because individuals possess their own goals and motivations, organizations utilize formal and informal mechanisms to ensure that individuals are working in concert toward some common purpose, even if that purpose sometimes conflicts with their members' individual beliefs and desires (Barnard 1968 [1938], 72-73).[18] To that end, all organizations develop and pursue collective goals or a guiding mission (Cyert and March 1963; Simon 1997 [1945]; Thompson 1967), and they are typically characterized by a strong survival instinct that stems from the pursuit of unfulfilled goals (Hannan and Freeman 1977; Pfeffer and Salancik 1978).

To achieve their goals and remain alive, organizations must continually search for new resources. Internally, members form coalitions and structures of authority to specify who has control over an organization's varied types of resources (Cyert and March 1963; Etzioni 1965; Pfeffer 1981). Externally, organizations compete against each other to obtain the resources they need to function, sometimes adopting new formal structures to access resources in their environments (DiMaggio and Powell 1983; Hannan and Freeman 1977). Because of the need for

[18] Put differently, organizations employ mechanisms to overcome the collective action problem. The most common means at their disposal is the ability to provide economic incentives (i.e., a salary) to employees. Voluntary organizations, on the other hand, rely more upon non-material incentives to keep their members engaged (Knoke 1988).

external resources, organizations engage in exchange (Powell 1990) and forge alliances (Das and Teng 2000; Eisenhardt and Schoonhoven 1996), which results in complex relationships of interdependence among the organizations in a given field (Pfeffer and Salancik 1978; Thompson 1967). Resources can take many forms. Social movement scholars in the resource mobilization tradition highlight the importance of money, labor, and space (McCarthy and Zald 1977; Zald and McCarthy 1987), but no less important are non-material resources, such as political power and legitimacy (DiMaggio and Powell 1983), knowledge and ideas (Haas 1990), and symbols (Etzioni 1965; Meyer and Rowan 1977). As I argue below, non-material resources have been as consequential as material resources to the persistence of the evolution-creationism policy conflict.

Although there are many attributes of organizations that are potentially consequential to the policy process, I argue that this never-ending quest for resources is fundamental to our understanding of organizational outcomes in the policy field. Generally, *political* organizations are guided by policy-oriented or electoral goals. These organizations have been well-studied by scholars of collective action, and the resources and motivations that sustain them have been discussed above. But political organizations are the not the only entities that regularly engage the policy process. In the case at hand, religious organizations and scientists have been regular participants in the evolution-creationism debate since its inception. Thus, in order to explain the persistence of the evolution-creationism policy conflict, we need a theory that can account for the goals, motivations, and resources of the non-political organizations engaged in the dispute, while setting forth the general "rules of the game" by which they engage the policy process.[19] In the following three sections, I describe the organizational dimensions of "religion" and "science," and I articulate the rules that underlie their engagement in the long-standing policy conflict.

Religion

From an outsider's perspective, religious engagement in the policy conflict may seem self-evident when the issue under consideration affects religious interests, but from an organizational perspective, it is anything but that. Religious organizations are guided by non-political goals, which get translated by an organization's leaders into a variety of non-political tasks, such as biblical education, worship, and conversion (Becker 1999). Consequently, their formal structures are not designed to facilitate quick political mobilization, and when organizational leaders do succeed in redirecting resources toward more worldly goals, they risk undermining their religious authority (Finke and Stark 2005, 45). Religious organizations therefore occupy a wide spectrum of political engagement, with most opting out of direct political confrontation (Wald 2003, 155). Only a small number of religious organizations actually engage the public sphere directly and regularly as organizations, drawing their motivation from a congregational culture or theology that privileges activism (Becker 1999; Wood 1999). Others engage the political process more sporadically, driven by a desire to impose a moral agenda on society (Morone 2003; Wald 2003, 155). In most cases, religious engagement with the public sphere happens at the individual level, with religious leaders assuming prominent

[19] Thanks to Margaret Weir for suggesting the "rules of the game" metaphor.

roles in political advocacy organizations or religious adherents exercising their electoral prerogatives on election day.[20]

But in all cases, I argue that political engagement by religious organizations is rooted in the need to control a single resource: knowledge. Religious organizations have many functions, but there would be no religion without the recognition by a group of people that they possess special knowledge concerning what human beings should believe and how we should behave in relation to each other. In all Christian religious organizations, the Bible is a primary source of knowledge, although differences in interpretation can lead to the differentiation of knowledge across congregations and denominations, and even among individual adherents in the same organization. Knowledge is used as a resource within religious organizations in two ways: (1) as a tool for organizational leaders to control the beliefs and behaviors of their members;[21] and (2) as a tool of competing organizational factions to acquire authority over the organization as a whole.[22] Externally, knowledge serves as a resource for attracting new members from an intensely competitive environment, with relatively few material means available for recruitment (Finke and Stark 2005; Warner 1993).

What makes knowledge such a potent force for control is less its substantive content than what religious organizations do with it. Within religious organizations, for example, belief in a certain set of church teachings is often a prerequisite for the attainment of religious goods, such as eternal salvation (Chaves 1994, 756). As such, it can be a powerful motivational tool for church leaders to compel action among their adherents. Additionally, it is not uncommon for congregational factions to battle for control over the organization by putting forward competing interpretations of church doctrine (Becker 1999). Usually, such intraorganizational conflicts are resolved when one faction obtains enough member support to seize or retain control of the organization's authority structure, but sometimes (especially in Protestant denominations), irreconcilable differences lead to organizational schism. This was the result in many Protestant congregations and denominations at the turn of the 20th century, when religious modernists and traditionalists failed to find common ground in their theological battle over the "higher criticism" (see Chapter 3 for details; see also Layman 2001; Szasz 1982).

Beyond the boundaries of religious organizations, knowledge can be used as a resource to recruit members away from other congregations or denominations—through alternative interpretations of religious doctrine or the promise of religious knowledge that is unfiltered by clergy. Additionally, some religious organizations enjoy advantages over their competitors as a consequence of their lack of dependence upon other organizations. For example, congregations that belong to denominations with centralized authority structures are highly dependent upon denominational leaders for control over church doctrine. As a result, they enjoy less discretion in

[20] It is interesting to note, however, that even at the individual level, religious organizations can have a strong intermediary effect on the likelihood of political participation. Becker (1999) argues, for example, that politically-active religious individuals are more likely to emerge from congregations that teach adherents to bear witness by living their values or by being leaders in their community. In contrast, congregations that teach their followers to bear witness through collective worship are less likely to produce politically-active adherents or leaders. Wood's (1999) study of two congregations in Oakland, California confirms the importance of religious organizations as intermediaries between religious individuals and the public sphere.

[21] For more on the use of resources as a control mechanism within organizations, see Etzioni (1965).

[22] For more on the battle over resources among competing organizational factions, see Pfeffer (1981).

their ability to use religious knowledge as a tool to recruit new members, compared to many evangelical congregations, which delegate control over religious knowledge to their adherents.[23]

Given the importance of knowledge to religious organizations, it can also play an important role in facilitating their engagement in the public policy process. Religious organizations risk losing control over the hearts and minds of their members every time new public policies are passed that contradict religious teachings. Consequently, religious organizations need to assert themselves as the sole legitimate interpreters of divine law if they want to maintain the faith of their own followers, while remaining relevant to potential new recruits (Quinley 1974; Wald 2003, 154). In the case at hand, the creation account of Genesis is one of the foundations of not only the Bible, but also Christianity itself. Consequently, if Christians begin to lose faith in the truth of the Creation story, then what other tenets of the Christian belief system might they also begin to disbelieve?

In organizational terms, we can reframe such crises of individual faith as one of the constant challenges of organizational authority. All organizations make authoritative claims of their members by formally and informally delineating what types of behaviors are allowable as members of the organization.[24] When members violate the rules of their organization or lose confidence in its teachings, organizational leaders have at least three options: (1) they can do nothing and hope that rebel members resolve the conflict on their own or leave the organization; (2) they can attempt to re-exert control over their members to correct erroneous behaviors; or (3) they can renegotiate the organization's core rules and teachings to be more consistent with the beliefs of their members.

In the United States, the emergence of evolutionary ideas produced all three types of responses among religious institutions: denial, control, and adaptation. As I will demonstrate in the following chapters, religious organizations that chose to re-exert control over their members have been most responsible for perpetuating the battle of ideas. Within such organizations, I argue, there is an irreconcilable conflict between biblical and scientific teachings on the topic of human origins. In their view, the Bible is the sole source of authority on the matter and should be taught accordingly. Any other theory of life contradicts their beliefs and represents a serious threat to the integrity of their religious belief system and the very survival of their congregations. With so much at stake, many religious organizations that hold this view have a powerful incentive to challenge all contradictory ideas that pose a threat to their beliefs.

Of course, not all religious organizations hold firm to the belief that evolution is incompatible with the Bible.[25] During the early part of the 20th century, many religious

[23] Hatch (1989) documents this phenomenon, arguing that the growth of American evangelical congregations during the 19th century was due, in part, to the ability of populist preachers to turn traditional religious authority on its head. These charismatic preachers "explicitly taught that divine insight was reserved for the poor and humble rather than the proud and learned" (p. 35).

[24] Barnard and Simon were the first to conceptualize this organizational phenomenon as a "zone of indifference" (or "area of acceptance"), in which subordinates are willing to accept decisions made for them by their superiors, even if those decisions conflict with their individual desires (Barnard 1968 [1938], 167-170; Simon 1997 [1945], 185-186).

[25] For example, so-called "theistic evolutionists" believe that evolution is the mechanism by which God created all life on earth. Acceptance of theistic evolution generally requires one to believe in a non-literal interpretation of the

organizations chose to renegotiate the central tenets of their faith, adapting to the external challenge posed by Darwinian ideas. The long-term effect of their efforts was to provide scientists with an occasional ally in their policy battles. Although these pro-evolution religious organizations have rarely been the driving force in the policy debate, they have often been willing to serve as a counterweight to their anti-evolution religious colleagues, supplying scientists with theological counterarguments and helping to legitimize the idea of evolution among certain religious segments of the population.

Science

On the other side of the debate, the institutions of science have a special interest in ensuring that all students, regardless of religious faith, are taught not only the theory of evolution, but also the empirical evidence supporting that theory and the process by which scientific knowledge is generated. Without a solid understanding of evolution, they argue, it is nearly impossible to practice the modern science of biology.[26] From their perspective, allowing alternative, non-scientific theories of human life to be taught in secondary schools has two potential pitfalls: without a grounding in evolutionary theory, students will not be adequately prepared for the biology classes they may encounter in college; and more significantly, the teaching of creationism could undermine the legitimacy of evidence-based research. Thus, whereas the teaching of evolution poses a threat to the integrity of many religious organizatios' belief systems, the teaching of creationism poses a threat to the legitimacy of the scientific enterprise as a whole.

Zeroing in on the organizational dimension of the "scientific enterprise" is not as straightforward as identifying the organizational dimension of American religion. Scientists can be found in numerous organizations throughout society, depending on the kind of work in which they are engaged. For purposes of this project, however, I limit my scope to two categories of scientists: (1) research-based scientists, who are typically based in universities and other research-oriented organizations and (2) science educators, who are typically based in secondary schools and universities. Additionally, both groups are represented by professional organizations, such as the American Association for the Advancement of Science and the National Association of Biology Teachers, to name two prominent examples.

Bible. On the early efforts to reconcile theology with evolution, see Gregory (1986). For a more recent theological argument concerning the compatibility between religion and evolution, see Ayala (2007).

[26] According to one of the leading professional associations for scientists, "The contemporary theory of biological evolution is one of the most robust products of scientific inquiry. It is the foundation for research in many areas of biology as well as an essential element of science education. To become informed and responsible citizens in our contemporary technological world, students need to study the theories and empirical evidence central to current scientific understanding" (American Association for the Advancement of Science, "AAAS Board Resolution on Intelligent Design," 10/18/2002, http://www.aaas.org/news/releases/2002/ 1106id2.shtml, accessed 11/28/2008). Likewise, the National Association of Biology Teachers provides a more pointed statement on the matter: "As stated in *The American Biology Teacher* by the eminent scientist Theodosius Dobzhansky (1973), 'Nothing in biology makes sense except in the light of evolution.' This often-quoted declaration accurately reflects the central, unifying role of evolution in biology. The theory of evolution provides a framework that explains both the history of life and the ongoing adaptation of organisms to environmental challenges and changes" (National Association of Biology Teachers, "Statement on Teaching Evolution," May 2008, http://www.nabt.org/sites/S1/index.php?p=65, accessed 11/28/08).

Although each set of organizations is governed by its own set of goals and priorities, the one feature common to all of them is the need to protect their most precious resource: knowledge. As in religious organizations, the substance of that knowledge is less important than the organizational processes by which scientific knowledge is generated. Modern science is more than just the accumulation of directly observable "facts" about the natural world. It is also a set of tools for discovering "hidden" knowledge about the very workings of human life, nature, and the universe itself. Whereas religious knowledge typically stems from a sacred text that is open to varying degrees of interpretation, scientific knowledge stems from the testing and continual refinement of theories about the material world, using evidence gathered by a community of researchers. As more and more evidence is accumulated, scientists attempt to reach a consensus about what the data actually mean in light of their theories.[27] Thus, scientific theories backed by an overwhelming consensus of the relevant scientific community at any give time might be said to possess more authority than "fringe" theories supported by only a handful of scientists.[28]

As in religious organizations, knowledge serves as an important organizational resource for the institutions of science. Within universities and research-based organizations, knowledge is the primary good that they produce. Whether sold, traded, or given away for free, knowledge production is the primary function of every research-oriented scientific institution. If universities serve as a kind of factory where scientific knowledge is produced, then secondary schools and institutions of higher education serve as a kind of retail store, where knowledge is "sold" by educators and consumed by students. And finally, professional organizations serve as institutional gatekeepers, guarding the process by which knowledge is produced and distributed and controlling access to the institutions of science. In short, scientists have much to lose every time religious organizations successfully impose their alternative views about the world on society at large. If religious knowledge is allowed to trump scientific knowledge time after time, scientists will begin to lose control over the production and distribution of knowledge concerning the material world.

Like their religious counterparts, scientists do not naturally gravitate toward the public policy process, but when they do, they tend to be more comfortable engaging during the early stages (Keller 2001). In contrast to religious organizations, scientists enjoy a privileged place in the policy process, by supplying policy makers with knowledge that can help solve complex public policy problems and by helping decision makers prioritize their goals (p. 23). Once again, knowledge serves as an important resource for the institutions of science, opening doors to the policy process and facilitating constructive relationships between scientists and policy makers. It is only when the substance of scientific knowledge and the process by which it is generated become fodder for public conflict that scientists find themselves on unfamiliar ground in the policy field.

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[27] Numbers (2007) discusses the distinction between the evidence-based authority of science and the biblically-inspired authority of Christianity in terms of two philosophies: evidentialism and presuppositionalism. Around the middle of the 20th century, American fundamentalists grew "increasingly divided over evidentialism, which allowed for natural theology, and presuppositionalism, which held 'that the self-attesting triune of God revealed in Scripture is the authority of all things'" (p. 68).

[28] Of course, fringe theories may ultimately come to be accepted by the mainstream scientific community, and theories that appear to enjoy significant authority may ultimately be proven incorrect or insufficient to explain newly observed phenomena (Kuhn 1996).

In the case at hand, creationists have leveled their public attacks on evolution by casting doubt on the theory itself and playing up any scientific opposition to the theory, no matter how slight or inconsequential such opposition might be in the wider scientific community. Scientists, on the other hand, have tended to focus most of their energy on the policy conflict over the teaching of evolution, while downplaying the battle of ideas. As I argue in the following chapters, this oversight has been a strategic mistake on the part of scientists. Had scientists concentrated their efforts on bringing the public over to their side, they might have denied creationists the opportunity to continue perpetuating the policy conflict. Additionally, by allying with organizations pursuing a different set of interests, scientists may have won some key public policy battles along the way (which undoubtedly helped expand the teaching of evolution in public schools), but the alliance shifted attention away from the underlying battle of ideas that caused the controversy in the first place. Without a sustained and coordinated effort to win the battle of ideas, I argue, scientists will continue waging a neverending conflict against religious organizations that possess considerable resources and motivation to remain in the fight.

Mechanisms

Having discussed the organizational motivations and resources unique to the non-political organizations engaged in the evolution-creationism conflict, we must now situate all of the major participants in relation to each other and to the policy process as a whole, and we must account for the key factors that motivated their engagement of the policy process across time. In the remainder of this chapter, I introduce the concept of "field bridging" as an analytical tool that can explain how creationists were able to extend the life of the policy conflict by tapping into ideas that had been nurtured in a distinct organizational field for decades. Field bridging also played a role in helping scientists achieve repeated policy victories by enabling them to forge alliances that were critical to their success.

In both cases, science- and religion-oriented organizations were motivated by the need to protect and preserve a fundamental resource: knowledge. By tapping into multiple networks, the key actors in the policy conflict found ways to reinvent themselves over time by translating their scientific and religious knowledge about human origins into political ideas that could be grasped by policy makers and the public alike. But ideas alone are not sufficient to sustain an organization over the long term. All organizations need some form of material resources to maintain themselves across time, and the actors on both sides of the evolution-creationism divide were no different. In both cases, organizations often turned to actors outside of their networks for material support. As I will demonstrate, the reliance upon allies can help explain some of the seemingly cyclical nature of the evolution-creationism policy conflict across history. Taken together, ideas and material resources have supplied both the motivation and the means to enable religion- and science-oriented organizations to engage the policy conflict over evolution, while trying to balance competing demands related to their primary (non-political) missions.

Field Bridging

All organizations are involved in relationships with other organizations at any given time. This supra-organizational level of analysis—commonly known as an "organizational field" (DiMaggio and Powell 1983)—is significant for two reasons: (1) organizational fields supply

resources and potential allies (or competitors), and (2) each organizational field demarcates a distinct group of organizations that share common interests and resource dependencies.[29] Because the resources available within a given organizational field can be unpredictable, it is imperative that organizational "boundary spanners" (e.g., managers, directors, and other organizational leaders who interact with the environment) develop relationships with actors in multiple fields to improve their odds of survival (Pfeffer and Salancik 1978).[30] As boundary spanners engage each other regularly, their organizations can become "embedded" in overlapping networks of social relationships, permitting less reliance upon formal contracts and a greater emphasis on informal mechanisms of exchange (Ansell 2003; Granovetter 1985). The net effect of this chase for resources, coupled with tendencies toward social embeddedness over long periods, is that organizations often find themselves occupying multiple fields at any given time, with the ability to draw upon needed resources and to build alliances when the need arises (Weir 2006). This ability to bridge organizational fields via networks is a testament to the creative adaptability of organizations and their ability to withstand environmental pressures that might otherwise lead to their demise.[31]

As I demonstrate in this dissertation, the concept of "field bridging" is key to understanding the underlying dynamics of the evolution-creationism policy conflict. I define field bridging as the phenomenon in which an organization draws material and non-material resources from one or more organizational fields in which it is embedded to support its goals and actions in a separate organizational field. In the case at hand, creationist organizations engaged in field bridging by drawing ideas from the organizations devoted to the scientific study of creationism (the "ideational field") in order to advance their policy goals in a separate organizational field comprising political and policy making organizations (the "policy field").

More generally, I argue that we should expect to observe field bridging in *any* policy conflict in which non-political actors are major participants.[32] Through such concepts as "iron triangles," "issue networks," and "policy subsystems," political scientists have long recognized the importance of inter-organizational relationships in the policy process (Baumgartner and Jones 1991; Heclo 1978). In these models, however, cross-field networks tend to be defined by

[29] Dimaggio and Powell (1983, 148) define an "organizational field" as "those organizations that, in the aggregate, constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies, and other organizations that produce similar services or products." "The virtue of this unit of analysis," they add, "is that it directs our attention not simply to competing firms,…or to networks of organizations that actually interact,…but to the totality of relevant actors" (p. 148).

[30] The concept of "boundary spanners" is described well by Thompson (1967), who argues that boundary spanners exist within organizations as a way of reducing uncertainty in their environments.

[31] There is a rich debate within organization theory about the limits of organizational adaptability in the face of environmental pressures. Pffefer and Salancik (1978) argue that organizations are extremely adaptable, while Hannan and Freeman (1977) argue that nonoptimal organizational forms tend to be selected out by the environments in which they operate.

[32] This argument builds upon Weir (2006), who uses the concept of "institutional networks" to show how "nonelite" organizational actors define their political interests in relation to the multiple networks in which they are embedded. Although Weir does not use the term "field bridging," the processes of interest definition and coalition building across institutional networks are essentially the same. The primary difference is that I define field bridging in terms of resource exchange, which is the mechanism by which organizations define their interests and build coalitions with certain actors. The focus on resources also makes room for the influence of ideas in the policy process, which are a critical resource for certain types of organizations, as described above.

the relatively narrow social dimension of *communication* among *political* actors: interest groups, bureaucrats, elected officials, and their staff (Berry et al. 2004). Adding an additional dimension by which inter-organizational relationships are defined—resource exchange—we can create a framework that allows us to probe the potential influence of political and *non-political* organizations in the policy process.[33]

Specifically, I argue that the policy process should be conceptualized as a set of interconnected organizational fields, comprising organizations continually chasing resources to survive.[34] At any given time, these organizations are engaged in varying degrees of social interaction (including both communication *and* resource exchange), in an attempt to effect policy change at one or more levels of government and in one or more policy venues. In long-term policy conflicts—where the primary actors are continually chasing new resources while having to negotiate conflicting demands across fields—we can expect to observe significant instability in the primary cast of characters as boundary spanners come and go. This dynamic flux of organizations entering and exiting the policy process can impede the passage and long-term sustainability of an organization's preferred policies, but it can also create opportunities for new alliances to be formed and for the infusion of new ideas into the policy process.[35]

Given this conceptualization of the overall policy process, we can define a "policy field" as a set of organizations seeking to influence policy makers on a particular set of issues. When disagreements arise among the actors in the policy field, conflict ensues. In a relatively simple

[33] Because non-political organizations are not directly engaged in the policy process on a continuous basis, they are typically excluded from the kinds of communication networks that political scientists have explored. Sabatier and Jenkins-Smith (1999) come close to establishing a model that permits the incorporation of non-political organizations, but their "advocacy coalitions" require a certain amount of regular involvement by the actors that compose them. Ultimately, their model cannot adequately account for those organizations that only engage the policy process sporadically and at irregular intervals over time. An organizational-field approach, on the other hand, assumes that organizations are embedded in multiple networks at any given time, some of which have little to do with the policy process. Through the agency of individuals within these network-embedded organizations, organizational fields are continually coming into contact with one another, creating opportunities for policy and institutional change.

[34] Along the same lines, Orren and Skowronek (2004) and Lieberman (2002) conceptualize actors as occupying multiple, overlapping social "orders." Although orders and organizational fields are comparable, I prefer the term "field" because it better conveys the organizational nature of the actors contained therein. Further, Lieberman's "orders" are more ambiguous, being defined in terms of both organizations and political ideas (i.e., ideologies). In my conceptualization, fields are composed *only of organizations*, while ideas (both political and non-political) are *resources* exchanged between organizations. Finally, resources in my framework are the source of political change (via social exchange), whereas the more nebulous concept of "friction" is the source of political change in Lieberman's account. Friction requires that there be some sort of discontinuity between multiple orders in order for change to occur. Although such structural tensions can indeed motivate actors to act in new ways, theories of political change cannot rest upon structural explanations alone. Organizations are adaptive, creative agents, which have the ability to induce institutional and political change, even when the structures in which they operate are highly constraining. An organizational approach can capture both the structural constraints of the institutional fieldss in which organizations are embedded, while allowing room for the agency of individual organizations (Emirbayer and Goodwin 1994).

[35] Along these lines, it should come as no surprise that social movements—which are organizational fields consisting of both political and non-political organizations—are particularly good at generating and framing new ideas (Snow et al. 1986) and are most effective at influencing the policy process when they forge alliances with elite political actors (Ganz 2000; Soule 2004; Soule and Olzak 2004). At the same time, the constantly changing membership of social movements can be a significant barrier to bringing about policy change (Meyer 2005).

conflict, where the issue being contested lends itself to a dichotomous choice, organizations in the policy field should tend to cluster into two distinct organizational fields, each united by an idea or set of ideas.[36] In more complex conflicts, such as the long-running national debate over health care reform, some organizations will go back and forth on specific aspects of the debate depending upon their organizational interests (which may conflict with their ideational or ideological preferences). Regardless of complexity, all policy conflicts—once resolved—result in a set of winners and a set of losers, with the winning organizations committed to seeing the new policy status quo consolidated and strengthened over time, and the losers looking for ways to roll back the new policy changes.

In policy fields where most of the primary actors are politically-oriented (such as the iron triangles of bygone days and Heclo's issue networks), the organizations on the winning side do not go away. Because of their political nature, they are embedded in multiple networks that interact on a regular basis with policy makers and the institutions of the policy process. Consequently, they are more likely to be in a position to resist changes to the new status quo than non-political organizations, which may have no choice but to return to their regular business following a policy win or loss. But non-political organizations are not wholly without the means to consolidate their policy victories. Because they are embedded in multiple networks outside of the policy process, non-political organizations may have a deeper reservoir of resources to motivate and sustain them during future rounds of policy contestation (if they choose to re-engage). By the same logic, non-political losing organizations should have the ability to perpetuate a policy conflict well into the future, so long as they are able to leverage their networks to provide the resources and motivations needed to sustain their cause.

In the case at hand, both sides have been able to keep from going out of business by tapping into new resources and recruits located in a distinct organizational field associated with the battle of ideas: the "ideational field."[37] As Figure 1 shows, the conflict over evolution actually consists of four primary organizational fields: (1) the **policy field** concerned with the teaching of evolution and creation science in the public schools, (2) an **ideational field** concerned with the question of human origins; (3) the organizational field of **religion**, comprising congregations, denominational bodies, and other religious organizations; and (4) the organizational field of **science**, comprising scientists embedded in universities, schools, and professional associations. As the directional arrows in the chart show, the fields of religion and science have been the primary suppliers of organizations and resources to both the ideational and policy fields. But the ideational field has also supplied many of the organizations and resources necessary for the policy conflict to persist.

[36] Political scientists refer to the ideas that unite organizations engaged in the policy process as political "ideologies," but ideas that enter the policy process can take many different forms—both political and non-political.

[37] The "ideational field" is the organizational field consisting of scientists, theologians, creationists, and other relevant actors, who are principally concerned with the question of human origins. What unites these individuals and organizations in a common field is their collaboration and competition around a common set of ideas associated with Darwin's theory of evolution by natural selection and the biblical account of human creation. It is important to stress that although ideas are the critical resource that creationists have used to their advantage throughout history, these ideas would have made little impact independently of the organizations that created, nurtured, and sustained their development over time.

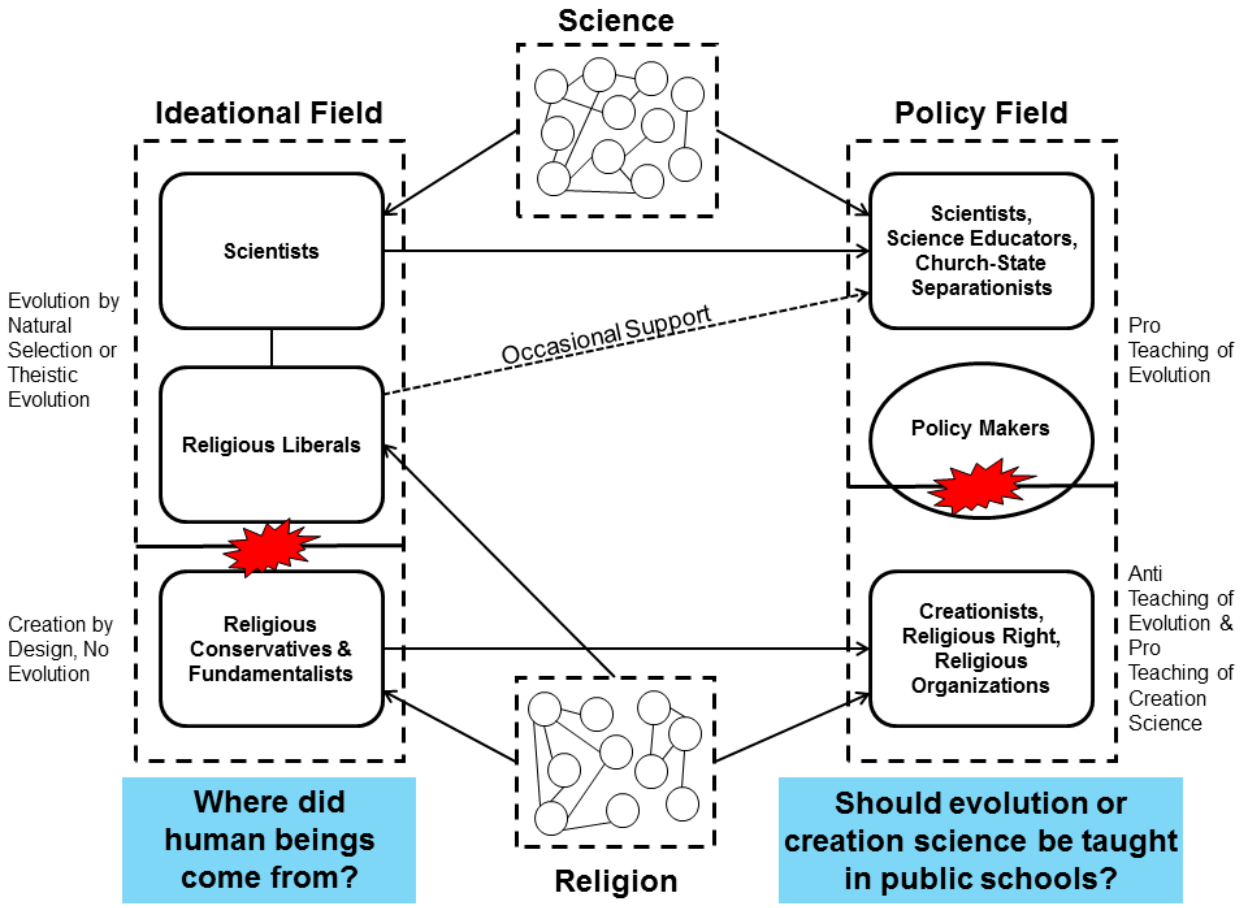

Figure 1. Four organizational fields in the evolution-creationism controversy.

Mechanisms of Policy Change

There are three general mechanisms by which field bridging can advance an organization's policy goals. First, organizations can reach into their organizational fields to secure needed *material resources* to stay alive and press their policy demands. Second, organizations can supply new *ideas* to organizations in the policy field. Third, organizations can *recruit new allies* from within their organizational fields. Having an extensive and diverse network of allies is important for at least three reasons: (1) allies can *reinforce the supply of ideas and material resources*, (2) allies in key positions in society can *influence public opinion* in favor of an organization's preferred policies; and (3) allies can lead organizations to *redefine their interests* in new ways.

None of these mechanisms of policy change and organizational survival should come as a surprise to political scientists. What is new in this explanatory account is the insight that non-political organizations engaged in the policy process have more resources and allies available to them than we might otherwise expect to find if we limit our scope to the policy field alone. Further, there is a long-term, temporal dimension to this account that is often overlooked in studies of the policy process that focus on only one stage of the process (e.g., issue definition, agenda-setting, legislating, implementation). By expanding the field of actual and potential

participants in the policy conflict and expanding our time horizon to probe the sources of conflict, we can develop a more convincing explanation of long-term policy change and conflict.

In the case at hand, I argue that we cannot explain the causes and consequences of the policy conflict without examining the temporally-prior battle of ideas. Following is a preview of the analytic narrative that will be fully developed in the following three chapters. The battle of ideas began during the 1800s as a private dispute among religious organizations of different theological leanings and between religious organizations and scientists. Then, in the aftermath of World War I, an important series of events occurred. Alarmed by the consequences of Germany's "Social Darwinism," William Jennings Bryan, the three-time Democratic presidential candidate and a leader in the Presbyterian Church, began an all-out national assault on the teaching of "Darwinism" in taxpayer-supported schools. Because of his relationships within both the policy and religious fields, Bryan successfully reframed a set of scientific and theological ideas into a political idea that could be acted upon by policy makers. With Bryan's support, the foes of evolution successfully mobilized a national social movement, which had several high profile victories in a few states.

By the end of the 1920s, the creationism movement had run out of steam; many of their elite allies had abandoned the cause and, with them, went much of the movement's material support. But despite the cessation of the policy conflict, the underlying battle of ideas remained unresolved. Many of the newly-created conservative Protestant congregations and denominational bodies still fiercely opposed the idea that life was created through evolution. Given their vested organizational interest in defending the biblical idea of Creation, they retreated to the private sphere and helped create a field of creationist organizations that would incubate a new set of ideas for the next 30 years that could counter evolution on its own terms.

On the other side of the divide, scientists grew increasingly frustrated during this long period of inactivity in the policy field. Although they won many of their policy battles during the 1920s, evolution still remained a taboo subject in most schools throughout the 1930s, 1940s, and 1950s. That would begin to change in 1958, as scientists recruited an important ally to their cause: the National Science Foundation. With the material support of the federal government, scientists were finally in a position to build a systematic case for policy reform in the way school districts taught science across the country. In 1963, the Biological Sciences Curriculum Study published its first textbooks, initiating a new period of conflict that continues unabated to the present day.

Throughout the remainder of the 1960s, scientists recruited more allies to their cause, including the ACLU, professional education groups, and a few local activists. With their support, they initiated lawsuits and other policy efforts to wipe the last remaining statutory bans on evolution off the books. Until this time, creationists had adopted a two-pronged strategy to keep evolution out of the public schools: (1) push for legislation to prohibit its teaching or (2) pressure textbook publishers to avoid the topic altogether. With the success of the BSCS textbooks and the Supreme Court's ruling in *Epperson*, the creationism movement was dealt a harsh blow. Consequently, by the end of the 1960s, the creationism movement was faced with the very real possibility of going out of business, as its opponents increasingly racked up victories in the policy field and slowly began to change the national policy status quo.

What happened next is a testament to the importance of non-political organizations being embedded in multiple organizational fields. Creationists were able rebuild their movement because of several factors. First, they were able to tap into the resources of the long-standing organizational field devoted to the scientific study of creationism. Not only did those organizations provide leadership for the revitalized movement, but they also were the primary source of the movement's new policy ideas. Second, creationists successfully framed these ideas in such a way that they were able to recruit new, active members to their cause, while building a large mass base among the general public (with the help of congregations spread out across the country). Third, creationists and their allies skillfully used the policy gains of the opposition as an argument for why their new policy solutions were needed. In this vein, they were able to help generate public backlash against evolution, channeling public opposition into their own cause. Finally, creationists developed alliances with two important groups of actors during the 1970s: the organizations of the Christian Right and conservative religious organizations throughout the United States. Additionally, in 1980, creationists gained their most high-profile endorsement yet from then-candidate Ronald Reagan, who called evolution "just a theory" and came out in support of the teaching of creationism. These allies would prove instrumental in helping the creationism movement disseminate its message to a wide audience and in opening doors to the policy process in certain states.

All of these factors together paint a compelling narrative of the reasons why the creationism movement did not simply die following the Supreme Court decision of 1968. But there is still a piece of the puzzle missing. Throughout this period, scientists were not inactive, but neither were they particularly effective in shutting down their opponents. The reason, I argue, is that many supporters of evolution failed to adequately appreciate the nature of the battle they were fighting. Indeed, it wasn't until a group of scientists organized themselves in the late 1970s to fight the battle of ideas that they began to make headway in the reinvigorated policy conflict over the teaching of "creation science." But it would take another alliance with church-state separationist organizations before scientists were able to end the new era of policy conflict in 1987.

The critical point is that the ideational and policy conflicts are two sides of the same coin in the evolution controversy. In order to explain the longevity of the policy fight, we must also account for the battle of ideas being waged simultaneously across time by a different, though overlapping, set of organizational actors. It is this distinction that scientists failed to appreciate and, as a result, they were unable to counter the reemergence of creationist organizations as a formidable opponent. Furthermore, the complacency of scientists in the wake of the second pivotal Supreme Court decision in 1987 helped pave the way for the emergence of "intelligent design" as the third (and still unresolved) era in the battle of ideas. Until scientists can figure out a way to win both the policy conflict *and* the battle of ideas, future policy skirmishes are likely, as long as creationists remain motivated and continue to draw material and ideational resources from their extensive network of supporters.

PLAN OF THE DISSERTATION

This study adopts a macrohistorical approach to analyze the conflict over the teaching of evolution in public schools. Consequently, the theory developed above is not meant to explain individual instances of agenda setting or policy success at a given point in time (other theories are better suited to such explanations). Instead, my theory is meant to explain *policy* success and failure and *organizational* success and failure over long periods of history. Additionally, this study focuses on the inter-organizational level of analysis, examining the influence of entire fields of organizations on the policy process over time.

There are several ways this study can be organized, but given the importance of history and timing in the theoretical account, I divide the project into three empirical chapters, each representing a distinctive era in the development of the policy conflict. Chapter 3 describes the historical origins of both the battle of ideas and the policy conflict over evolution, beginning with Charles Darwin, continuing with the anti-evolution policy advocacy of William Jennings Bryan, and concluding with the effort by antievolutionists to keep their cause alive from the 1930s onward. Chapter 4 sets forth the major premise of this study—that major national policy change has occurred over time. Chapter 5 answers the central puzzle of this study: in the wake of the 1960s era of policy change, why were the losers of the conflict able to mount such a successful comeback, and why did the winners fail to consolidate their gains to put their opponents out of business? Finally, in Chapter 6, I conclude the dissertation with a brief discussion about the nature of the "victory" that scientists achieved during the 1980s. I also situate this case in relation to other policies, which exhibit similar characteristics, and I offer several theoretical implications for scholars of American politics to consider.

CHAPTER 3: THE BATTLE OF IDEAS

> [T]he first shots have been fired, the hosts are gathering and the battle is on. We welcome the conflict most heartily. We shall watch its progress with intense interest and THE HERALD will, without hesitation, train its guns on those men and teachings who, if permitted to go unrebuked, will destroy the faith of the people in the inspiration of the Bible….Let every faithful soldier of the cross draw his sword and hasten to the firing line in the coming conflict between the saving faith and destructive belief.
>
> —Henry Clay Morrison, Methodist Preacher[38]

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During the 1800s, Charles Darwin's theory of evolution and natural selection sent shockwaves through the modern world, sparking a "battle of ideas" between religious and academic elites over the question of human origins. More fundamentally, Darwin's discoveries provoked a crisis of authority within many religious organizations, as religious leaders struggled to reconcile their theologies with developments in the biological and geological sciences. Until the late 1910s, this dispute could be characterized as a "private conflict" between religious organizations of different theological leanings and between religious elites and scientists. Following World War I, however, the battle would make its way into the public sphere with the help of one man: William Jennings Bryan.

Because he occupied leadership roles in both the religious and political domains, Bryan was in a unique position to act as a bridge between the religious networks and political networks crisscrossing the United States. By translating the religious ideas at the heart of the private conflict over evolution into political ideas that could be understood by policy makers and the public alike, he made it possible for the idea of evolution to stand trial (literally) in one of the nation's most celebrated court cases, and he helped launch a national movement to ban the teaching of evolution from public, taxpayer-supported schools. The process of "field bridging" first pioneered by Bryan would be replicated time and time again over the succeeding decades by the foes of evolution, and many of his ideas can be traced to current-day battles over "creation science" and "intelligent design." By the end of the 1920s, the public conflict began to lose steam. Despite a few statewide policy victories, most of the anti-evolutionists' policy crusades failed in state legislatures across the country. Although the public policy conflict would come to an end by 1930, the ideas would live on in several organizations that retreated from the public fight in order to ready their attack for another day. Figure 2 illustrates the key events that occurred during this time period.

[38] Statement originally published in the *Pentecostal Herald*, 10/19/1921; quoted in Numbers (1998, 121). Numbers describes Morrison as "the acknowledged leader of the Holiness movement within the Methodist Episcopal Church, South, and an orator of Bryanesque proportions" (p. 120).

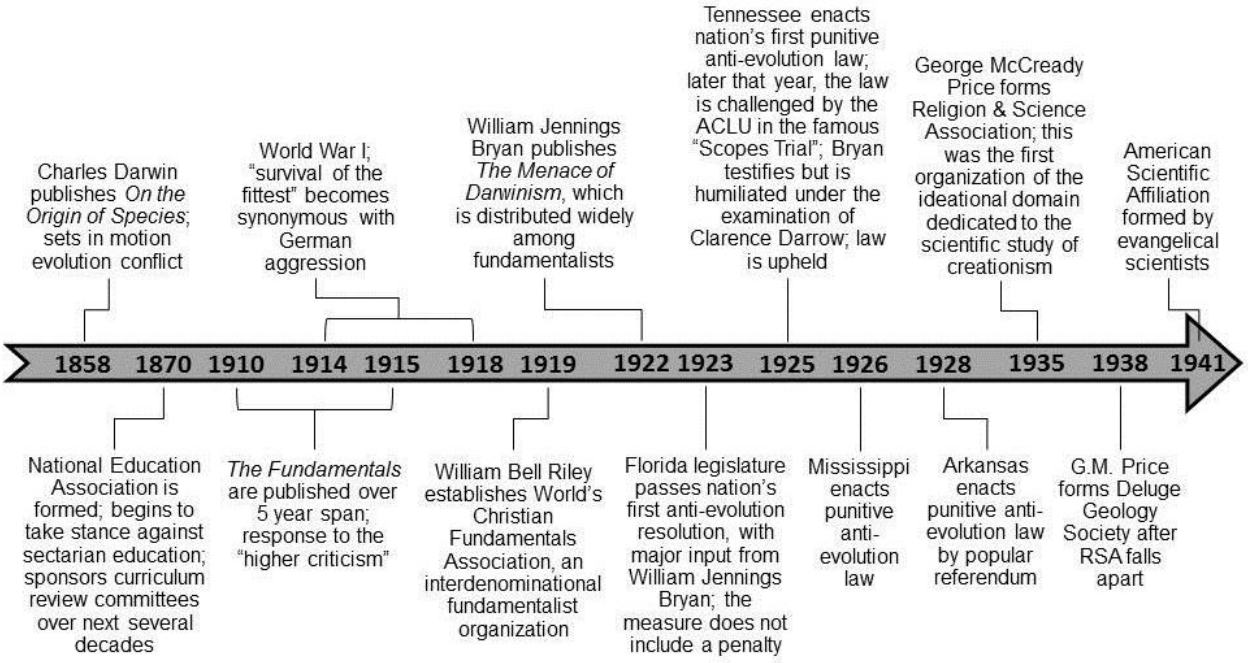

Figure 2. Timeline of key events, 1858-1941.

In short, the ideas and organizations created during the 1800s and early 1900s defined a new organizational field of private conflict, which has fueled the perpetuation of *policy* conflict through modern times. In the next section, I describe the origins of evolutionary theory and the crisis of faith that it provoked in the United States. I then turn to a discussion of William Jennings Bryan, analyzing historical documents to describe the essential role he played in bringing the battle of ideas to the public sphere. Next, I review the 1920s battle to ban evolution from public school classrooms, which has been covered extensively by other scholars, with a particular emphasis on how the battle of ideas influenced the public conflict. Finally, in the last section, I trace the rise of "creationist" organizations that emerged from the ashes of policy defeat to keep the battle of ideas alive long enough to influence future rounds of policy contestation.

PRIVATE CONFLICT

In the beginning, there was Charles Darwin, a British naturalist, who generated the ideas that would revolutionize our understanding of human origins and humankind's relationship to the environment. As a result of his meticulous empirical investigations and brilliant theorizing, Darwin would set in motion the first significant and widespread conflict over the question of human origins. Notably, this dispute did not begin as a *public* conflict (i.e., as a matter for policy makers to settle), but as a *private* conflict among the major organizations in society with a vested stake in the result. In one field, the question of human origins sparked conflict within the scientific community, as Darwin's ideas upturned established notions of design by a Creator, providing instead the first plausible naturalistic explanation of biological development. As these ideas took hold among scientists, the issue sparked further conflict between scientists and religious leaders, as evolution threatened to undercut the very foundation of their authority. By

the early 20th century, Protestant Christianity would find itself split down the middle over major theological questions, not the least of which was the issue of evolution and humankind's relationship to the natural world.

Ideas

A New Scientific Understanding of Human Origins

In 1831, Charles Darwin embarked upon a five-year expedition aboard the British Navy's H.M.S. *Beagle* (Larson 2006 [2004], 55). Although the true purpose of the mission was to chart part of the South American coastline, the voyage is best known for providing Darwin with the insights and inspiration that led to his development of the theory of evolution by natural selection. The story of Darwin's travels has been covered extensively and is beyond the scope of this study,[39] but two of the foundational ideas he developed during this period are worthy of mention. First, Darwin recognized the inherent relationship between the geological features of the earth and the life forms contained therein. Specifically, he observed that natural barriers (e.g., oceans, waterways, mountains) seemed to result in a proliferation of species that could not be adequately explained by any known theory (Bowler 2009 [1983], 153). Second, during his visit to the Galapagos Islands, Darwin's observational studies of mockingbirds provided him with the crucial insights that confirmed his growing realization that all species were not, in fact, created in their present form by a divine Creator but, rather, were in a continual state of development by a process of transmutation. According to the historian of science, Peter Bowler:

> It seemed unreasonable to suppose that every one of these tiny islands lost in the middle of the ocean should have received its own visit from the Creator. To Darwin, it was more plausible to suppose that a few members of the ancestral species had been accidentally transported to each of the islands, where they founded breeding populations that remained isolated from one another by the barrier of the sea…In the absence of normal competition, a wide range of ecological possibilities was open on each island. As each population specialized for its particular way of life, it changed further from the original form, and eventually each island had its own distinct variety. This much could have been explained by creationist beliefs, but Darwin now saw that the process had generated not merely varieties but distinct species. (Bowler 2009 [1983], 155)

After returning to Great Britain, Darwin's next critical insight would come to him in 1838. Inspired by Thomas Malthus's *Essay on the Principle of Population*, Darwin developed the idea of "natural selection." In short, natural selection is the idea that—in a competitive environment—where species are constantly searching for limited resources, only the fittest are

[39] Larson (2006 [2004]) and Bowler (2009 [1983]) provide excellent historical accounts of Darwin's voyage aboard the *Beagle*, detailing the key discoveries that would lay the groundwork for his later work on biological evolution.

able to survive and reproduce more of their own kind (Larson 2006 [2004], 68-69). According to historian Edward Larson:

> Darwin envisioned a branching process of evolutionary development, with various daughter species evolving in different directions from a common ancestral type to fill available geographic spaces and ecological niches. For Darwin, differential death rates caused by purely natural factors created new species. God was superfluous to the process. (Larson 2006 [2004], 69)

Darwin clearly recognized the religious implications for his theory of natural selection. If God was truly superfluous to creation, and the origins of life could be explained by a long-term process of evolutionary development from "lower" life forms, then what role did God actually play in the world, and what would become of the biblical account of Creation? In recognition of the trouble he was set to unleash by going public with his theory, Darwin delayed publication of his work by two decades. During that time, he compiled an extensive body of evidence, while continually refining and deepening his theory to protect against the attacks that were sure to come.

Although Darwin initially set out to write a two-volume book, setting forth in meticulous detail both the theory of natural selection and the evidence to support his ideas, those plans were cut short when he realized that he was in danger of losing priority for his discoveries if he did not publish his material sooner (Bowler 2009 [1983], 173-176).[40] Consequently, in 1858, Darwin published *On the Origin of Species by Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*, a significantly shortened version of his original plan, but a monumental accomplishment nonetheless. After the *Origin of Species* was published, there ensued a battle among professional scientists with Darwin's supporters using every weapon at their disposal to convince other scientists of the merits of natural selection. Within the span of 20 years, their efforts resulted in a dramatic realignment of the scientific community around the idea of evolution, with most scientists accepting evolution as the mechanism by which life developed, even though there still remained substantial disagreement about the ultimate causes of life (Bowler 2009 [1983], 185-186). This turn of events would have dramatic implications not just for professional scientists, but also for theologians and people of faith. If the creation of life could be explained by natural mechanisms alone, then what role remained for God? This quandary was problematic for Western religious organizations, which rooted their belief systems in the authority of a divine creator; and it was problematic for many naturalists, who had developed their scientific worldview around the notion of a divine designer (Larson 2006 [2004], 90).

Even more troubling was the assertion by some that natural selection could also be applied to human beings. Interestingly, Darwin did not delve into the subject of *human* evolution in the *Origin of Species*, but it wouldn't take long for scientists and theologians to extend the debate to that terrain. In 1871, Darwin himself tackled the subject in his two-volume book, *The*

[40] The catalyzing moment was when Darwin received a manuscript from fellow naturalist Alfred Russel Wallace, in which Wallace independently developed many of the same ideas underlying the theory of natural selection (Bowler 2009 [1983], 173; Larson 2006 [2004], 72).

Descent of Man. Although Darwin made his best case for human evolution, it would take many more decades for the idea to take hold of the scientific community, and even longer for theologians to come to terms with the implications for their religious belief systems (Larson 2006 [2004], 96-100).

Theological Upheaval

Darwin's theory of natural selection sparked a debate in both Britain and the United States among people of faith, many of whom viewed his radical ideas as a threat to the authority of the Bible. But while some set out to refute Darwin, others chose a middle path of reconciliation. By the 1880s, liberal Protestant theologians began to embrace evolution as an idea "pregnant with theological potential," even though most remained unconvinced about the veracity of natural selection (Gregory 1986, 378, 383).

In the United States, one of the most prominent and vocal reconcilers was Asa Gray, a Harvard scientist and Presbyterian, who articulated a middle-ground position of evolution by divine design, known as "theistic evolution" (Larson 2006 [2004], 86; Szasz 1982, 3). In general, theistic evolutionists believe that evolution is the *mechanism* by which God created all life on earth, but there is disagreement among them about the degree to which God has continued to intervene in the world since the first moment of creation (Scott 1997, 271-272).[41] Theistic evolution proved to have widespread appeal among the mass public and continues—to this day—to hold sway over most Americans who believe in evolution (Szasz 1982, 3).[42] This point must be stressed: although Darwin's ideas sparked a conflict that, to some, threatened the very authority of religion itself, for many individuals, evolution was not necessarily irreconcilable with their religious beliefs. Consequently, it would take the concerted actions of a group of conservative religious elites to stoke the controversy into a full-blown religious crisis during the first two decades of the next century (Szasz 1982, 7).[43]

At the same time as Darwin's ideas were making their way through religious circles and the mass public, a larger theological conflict was beginning to spill over into the general public over the issue of "higher criticism," or the effort among religious liberals to subject the Bible to historical analysis (Szasz 1982, 15). By placing the Bible in historical context, liberal theologians argued that both the Old and New Testaments should not be read as the literal word of God but, rather, interpreted as the literature of multiple authors writing in distinct historical eras. In this vein, Szasz notes, "[t]he flood appeared universal, but it was only local; Ecclesiastes merely offered a cynic's view of life; Jonah, read afresh, should be seen as a parable and not as history or magic; and Job was a great narrative poem" (p. 34). By the beginning of the 20th century, liberal religious thinkers succeeded in spreading the higher criticism to a mass audience, and

[41] Interestingly, Darwin rejected Gray's conception of theistic evolution, because he refused to believe that God would have used such a cruel mechanism as natural selection to create new life. In a letter to Gray, Darwin wrote, "But I own that I cannot see as plainly as others do…evidence of design & beneficence on all sides of us. There seems to me too much misery in the world. I cannot persuade myself that a beneficent & omnipotent God would have designedly created the Ichneumonidae with the express intention of their feeding within the living bodies of Caterpillars" (quoted in Larson 2006 [2004], 92).

[42] See Chapter 5 for a discussion about public attitudes toward evolution.

[43] The first and only American Protestant group to officially denounce evolution during the 19th century were the "Presbyterians of the South" (Szasz 1982, 6).

liberals achieved strong representation in most major Protestant denominations (p. 35).[44] But as these ideas made their way through the public, a backlash began to build among conservative and evangelical Protestants against the liberals who sought to modernize their denominations (pp. 24-29).[45]

During the first two decades of the 20th century, a segment of these conservative Protestants would successfully foment their grievances into a full-fledged movement, known as "fundamentalism" (Lienesch 2007, 8-9; Marsden 2006, 4-5).[46] Both the term fundamentalism and the movement come from a series of essays, known as *The Fundamentals*, published between 1910 and 1915. Penned by many authors, *The Fundamentals* encompassed a wide range of views, with roughly a third of the articles devoted to attacks on the higher criticism and a defense of the Bible, another third devoted to theological issues, and the remaining third covering a wide range of topics, including personal testimony and the importance of evangelism. Although evolution was not a central topic of *The Fundamentals*, the relationship between the authority of science to the authority of the Scriptures was a common theme (Marsden 2006, 119-120).

Even before the publication of *The Fundamentals*, the battle lines were being drawn between liberals and conservatives over the theological issue of "dispensational millennialism." On one side, premillennialists believe that Christ's return is necessary to usher in the one-thousand years of peace prophesied in the Book of Revelation (20:1-6). On the other side, postmillennialists believe that Christ will return only after humankind finds a way to bring about a millennium of peace. Further complicating the division during the late 19th century was the issue of dispensationalism, or the idea that history is divided into different ages (dispensations), which can only be brought to an end by Christ's intervention. Many premillennialists of this era believed that they were living at the end of one such age in late 19th century America and that Christ's return was not only imminent, but necessary to usher in a new age of peace. Hand in hand with this new type of premillennial thought was a strong belief in biblical inerrancy, or the notion that the Bible should be read literally as the authoritative word of God—a belief that was in direct opposition to the higher criticism's emphasis on historically-informed interpretation and analysis (Szasz 1982, 72-74). Thus, fundamentalism sparked a battle of ideas between fundamentalists and modernists that was fought within the organizations of American Protestantism—mostly at the denominational level, but eventually spilling over into local congregations. The goal of fundamentalists was to defend dispensational premillennalism and biblical inerrancy and to mount a forceful counterattack against the higher criticism.

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[44] Congregations are the basic organizational unit of American Protestantism. Denominations are organizations, too, but one level up from the congregation. As such, denominations encompass multiple congregations in varying degrees of confederation, with differing relationships of authority between a denomination and its member congregations (Chaves 1993).

[45] Among the retaliatory actions taken by some Protestant denominations against liberal thinkers was a series of high-profile heresy trials during the late 1900s. After the initial wave of trials, they eventually died out during the early 20th century (Szasz 1982, 26-27).

[46] I follow Marsden's (2006, 5) use of the term "fundamentalism," which represents both a doctrinal commitment to dispensational premillennialism and biblical inerrancy, as well as the "larger phenomenon of the militantly anti-modernist evangelicalism of the 1920s…[which] had wider roots, cultural as well as theological and organizational." Further, fundamentalism as a movement was concerned with not only eradicating all traces of liberal thought from the churches, but also ensuring that "Darwinism" would not gain a foothold in the schools (p. 5).

Initially, evolution (or "Darwinism," as the fundamentalists referred to the idea of evolution by natural selection) was not high on the list of fundamentalists' grievances during the early years of their movement, but that would change after World War I. Applying the lessons of the Great War to their cause, fundamentalists were able to make a concise argument about the dangers of modernist theology, by linking Darwinism's "survival of the fittest" mechanism to the larger battle of ideas in which they were engaged. According to George Marsden:

> Without the new cultural dimension it is unlikely that the debate over Darwinism could have been revived in the spectacular way it was or that fundamentalism itself would have gained support. Americans had just fought a war that could be justified only as a war between civilization and barbarism. German barbarism could be explained as the result of an evolutionary "might is right" superman philosophy. The argument was clear—the same thing could happen in America. (Marsden 2006, 149)

Given the experience of World War I and the concerted efforts by fundamentalists to link Darwinism to German aggression, opposition to evolution soon became one of the most potent rallying cries of the fundamentalist movement by the late 1910s.

Organizations

As the previous section demonstrated, ideas played an essential role in sparking the conflict between scientists and religious individuals over the question of human origins. Darwin's theory of evolution by natural selection set the entire conflict in motion, and it soon became part of a much larger battle of ideas concerning religious authority among people of faith. But ideas alone cannot explain the perpetuation and persistence of conflict. Also essential to the story were the organizations that helped spread the ideas, while sowing the seeds of conflict in their respective fields. Two sets of organizations helped lay a foundation for the private conflict over human origins to become a public conflict over the teaching of evolution in taxpayer-supported schools. First, the National Education Association fought to remove all traces of religious influence from public schools, which allowed public schools (as they grew in number) to become the venue through which evolutionary ideas began to spread to an increasing number of students and their parents. Second, the World's Christian Fundamentals Association and its religious allies launched a counterattack to thwart the secularizing changes that were occurring in the public schools and society at large. Through the combined efforts of these organizations, the teaching of evolution in public schools would rise to national prominence in the early 1920s as an issue ripe for consideration by policy makers.

The National Education Association and Public Schools

During the first two decades of the 20th century, American public life became increasingly secularized, as a number of intellectual elites systematically argued that religious beliefs and practices were no longer relevant in the modern world (Smith 2003a). Although there were differences in thought among these elites, the one thing they shared, according to the

sociologist Christian Smith, was "a dedication to the ultimacy of individual experience, and a deep antagonism toward external authority and traditional conventions," as embodied in the Protestant Establishment of the time (p. 34). These intellectuals were not passive in their rejection of religious authority, however. As Smith and others have argued, secular elites were proactive in their efforts to uproot the religious foundations of many institutions in American society, including the public educational system (Smith 2003b).

Until the late 19th century, public education in the United States had always included religious instruction (Beyerlein 2003). This basic feature of American public education was reflected in the National Teachers Association, which was formed in 1857 with a mission "[t]o elevate the character and advance the interests of the profession of teaching, and to promote the cause of popular education in the United States" (quoted in Beyerlein 2003, 162). As Kraig Beyerlein argues, early NTA leaders (who were overwhelmingly liberal Protestants) saw advancing the cause of public education as indistinguishable from promoting religiously-based public education. But they also believed that instruction should be nonsectarian, "which, at least to these educators, meant a common, generalized Protestant Christianity" (p. 166).

In 1870, the NTA merged with the American Normal Association, the National Association of School Superintendents, and the Central College Association, and the resulting organization became the National Education Association (NEA) (Beyerlein 2003, 169-170). Under the new banner of the NEA, leaders within the organization began to argue that religion should have no place in the public schools. To that end, the first front against religious instruction was opened by William Torrey Harris, superintendent of the St. Louis Public Schools and president of the NEA. In an address before the 1875 NEA annual convention, Harris argued that the question of whether religion should be taught in the public schools needed to be reconsidered, and throughout his tenure as president, he fought for a wholly secular public education (pp. 174-175).

Harris's support for secular public education was revolutionary for the time period, but his views were just the latest in a long line of secularizing changes that were beginning to make their way into public education, beginning first with the supplanting of denominational colleges by secular research universities throughout the United States (Beyerlein 2003, 176). According to Beyerlein, as these secular research universities increased in number and influence, they began to influence the NEA through cross-membership in two ways. First, many new NEA members no longer believed that religion was necessary to instill morality in students; and second, many argued that religion was simply too divisive to be taught in public schools in a nation as diverse as the United States (p. 178). Despite some resistance by NEA members, by the turn of the century the secular activists had won the battle within the NEA, as the Association adopted a position that "normative religion" should not be taught in public schools and the Bible should be taught as a literary document, rather than a theological text (p 193). William Torrey Harris encapsulated the position of many secular educational elites of this era, stating: "The principle of religious instruction is authority; that of secular instruction is demonstration and verification. It is obvious that these two principles should not be brought into the same school, but separated as widely as possible" (quoted in Beyerlein 2003, 192).

In line with the organization's newfound emphasis on verification and demonstration, the NEA sponsored a number of high-profile efforts to improve secondary-school science curricula. The first major initiative was the Committee on Secondary School Studies in 1893, composed of five university professors, three teachers, and one school superintendent (Hurd 1961, 40). The Committee's goal was to investigate and make recommendations concerning revamped secondary school curricula in the fields of natural history, botany, zoology, and physiology (p. 10). Three years later, these curriculum activities were institutionalized in the NEA's Department of Natural Science Instruction, headed by Charles Bessey, a Botany professor from the University of Nebraska (p. 13). Among the changes brought about by these and other curriculum reform efforts was the unification, during the early 20th century, of the fields of botany, zoology, and physiology into a single high-school biology course. In an effort to provide some structure to the new course of study, the NEA created the Committee on Natural Sciences in 1913, composed of 13 teachers, three university professors, and one doctor (p. 32). The Committee offered suggestions for how to improve the teaching of biology, and it designed a biology course based on the study of plants, animals, and humankind, with the overarching theme being *human* biology (p. 33).

Thus, with the help of the NEA, scientists and science educators were able to create the conditions necessary for the theory of Darwinian evolution to make its way into public school biology classes. The essential conditions included: the nationwide proliferation of public schools with an increasingly secular character, expanded science offerings at the secondary-school level, and an increased emphasis on human biology as the unifying theme behind the life sciences. The data confirm the dramatic changes in public education that occurred at the turn of the century. In 1890, there were 202,963 students in 2,526 high schools. In 1920, there were 1,851,968 students in 14,326 schools, a 900 percent increase in the number of students attending public schools in just three decades (Larson 1987, 112). Likewise, the number of students taking biology courses in high school increased from 7,883 in 1910 to 80,403 in 1915, with consistent increases in the years that followed (Hurd 1961, 41).

Additionally, evolution was not yet a taboo topic in the study of high school biology. In a study of the leading high-school science textbooks of the late 1800s and early 1900s, historian Edward Larson argues that textbook authors did not shy away from discussing evolutionary ideas. Rather, "[t]o the extent that textual content was an indication of teaching, public high schools were teaching evolution decades before the anti-evolution crusade, with the presentation seeming to grow more dogmatically Darwinian over time" (Larson 1987, 108). An example of this trend was the textbook, *A Civic Biology*, published in 1914 by George W. Hunter. Hunter's volume was used extensively in high-school biology courses following its publication and would feature prominently as the textbook at the center of the 1925 Scopes Trial (discussed below). *A Civic Biology* gave ample treatment to evolution and heredity and included a biographical sketch of Charles Darwin at the end of the book, noting that Darwin's "wonderful discovery of the doctrine of evolution was due not only to his information and experimental evidence, but also to an iron determination and undaunted energy" (quoted in Larson 1987, 107).

This expansion of secondary schooling and biology course offerings had the effect of exposing an increasing number of students and their parents to Darwin's revolutionary ideas. Combined with the other secularizing changes occurring within society at large, the ideas

presented in these textbooks were pounced upon by fundamentalist leaders as an example of the kind of dangerous ideas that could undermine religious and biblical authority if allowed to propagate. By 1920, the conditions were set for a large-scale fundamentalist revolt.

World's Christian Fundamentals Association

Fundamentalists would find a champion in William Bell Riley, pastor of First Baptist Church in Minneapolis, who played the pivotal role in turning fundamentalism—the theological critique of Protestant liberalism—into an organized movement (Szasz 1982, 89-90). In 1919, Riley organized an eight-day conference in Philadelphia, which reportedly brought together 6,000 conservatives from over 40 American states and eight foreign countries (p. 90). The conclusion of the conference marked the formation of the World's Christian Fundamentals Association (WCFA), which shortly thereafter sponsored a series of conferences in major cities across the United States (p. 91). From its inception the WCFA sought to represent all fundamentalists across denominations, but most of its members believed in premillennialism, and its leaders were overwhelmingly Baptist (p. 93).

The WCFA was not the only organization that purported to represent fundamentalists during this time period. Other organized efforts included the Fundamentalist Fellowship of the Northern Baptist Convention and an organized conservative revolt within the Presybterian Church in the U.S.A (the Northern Presbyterian denomination) (Marsden 2006, 169-171).[47] The two latter efforts were rooted in the two major Protestant denominations where neither side (liberals nor conservatives) had managed to achieve control of their organizations. The WCFA, on the other hand, was an interdenominational movement, which sought to give voice to a broader set of fundamentalist grievances. Among their concerns was the spread of Darwinism, an issue which rarely rose to the top of the list of the intradenominational church conflicts being waged by Baptists and Presbyterians (p. 169).

William Bell Riley, in particular, was one of the most fervent anti-evolution crusaders, who recognized the potency of the issue in attracting a mass base to the fundamentalist cause. According to Riley, "When the Fundamentals movement was originally formed, it was supposed that our particular foe was the so-called 'higher criticism'; but, in the onward going affairs, we discovered that basal to the many forms of modern infidelity is the philosophy of evolution" (quoted in Szasz 1982, 107). The "philosophy of evolution," which proved to be such a powerful rallying point for fundamentalists of all types was the Darwinian concept of "survival of the fittest." As discussed above, fundamentalists used the lessons of World War I and German aggression to argue that the ideas of Darwinism had profound moral implications for society as a whole and were therefore too dangerous to be allowed to spread.

At around the same time that the WCFA was getting started, William Jennings Bryan—the former U.S. Secretary of State and three-time losing presidential candidate—also began to

[47] Note that most of the internal denominational strife over evolution was being waged in the northern denominations associated with the Presbyterian and Baptist traditions. The Southern Baptist Convention and Presbyterian Church in the U.S.—both southern denominations—did not experience very much internal disagreement over the issue because of the organizational strength enjoyed by conservatives in each group (Marsden 2006, 165).

take an interest in evolution. Like Riley and the premillennialists of the WCFA, Bryan was concerned about not only the theological implications of Darwinian evolution, but also the moral consequences for society. Writing in 1921, Bryan articulated just how strongly he opposed evolutionary ideas, invoking Darwinism as one of the causes of World War I:

> That you may understand that my position is not suddenly taken and is not likely to be abandoned, I beg to say that my dissent from Darwin began about twenty years ago; that my convictions were deepened by the fact that Neitzsche carried Darwinism to its logical conclusion and laid the foundation for the world's bloodiest war; that in my judgment, Darwinism is largely responsible for the acute labor trouble throughout the world—the basis of which is the individual "efficient for himself" and no one else. **I believe Darwinism to be the greatest menace to the Christian Church and to civilization** (emphasis added).[48]

By the early 1920s, Bryan would become the most vocal and visible anti-evolution spokesman in the United States, a role he happily played until his death in 1925. As Bryan's stock rose, so too did the WCFA's interest in recruiting him to their cause. But despite repeated attempts by Riley to enlist Bryan as the WCFA's leader, Bryan kept his distance, preferring instead to fight evolution on his own terms (Marsden 2006, 170).[49] As I argue in the next section, Bryan's decision not to ally himself too closely with the WCFA (or any other anti-evolution organization) was one of the reasons that he was so successful in translating the private conflict over the question of human origins into a public conflict over the teaching evolution in public schools.

PUBLIC CONFLICT

We have now traced the contours of the battle of ideas, a private conflict that began with the publication of the Darwin's *Origin of Species*, pitting scientists against people of faith, and turning religious conservatives against religious liberals. The battle of ideas was first and foremost a conflict over the question of human origins: Where did humankind come from, and how did human beings develop into their current form? With the help of a few key organizations, the private conflict over human origins was poised to spill over into the public domain. But although fundamentalists were quick to seize upon the implications of Darwinism, linking the idea of evolution to public school instruction, there is no inherent reason why the conflict had to become a matter for policy-making institutions to consider. The WCFA did launch an anti-evolution crusade throughout the country, but its message might have remained confined to the fundamentalist movement without the assistance of one man: William Jennings Bryan.

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[48] Letter from Bryan to Rev. E.W. Blakeman, The Wesley Foundation of Wisconsin, William Jennings Bryan Personal Papers, Library of Congress, 10/4/1921, Container# 34.

[49] In 1923, Riley sent a telegram to Bryan, in which he wrote that Bryan was the "unanimous choice of Christian Fundamentals Convention for our president." Bryan turned down the offer but offered "every possible assistance in defense Bible [sic] against those who attack it under the guise of science or philosophy." (Telegram from Riley to Bryan, William Jennings Bryan Personal Papers, Library of Congress, 5/3/1923, Container# 37; Telegram from Bryan to Riley, 5/3/1923, Container# 37.)

In the next section, I detail the critical contributions of Bryan in bringing the anti-evolution ideas of the fundamentalism movement to a mass audience. Because of the positions he occupied in both the religious and policy fields, Bryan was singularly poised to act as a bridge between the two. The pivotal role played by Bryan in launching the public conflict over the teaching of evolution is not a new argument,[50] but the "field bridging" argument presented below is an original contribution to studies of the anti-evolution movement.

Field Bridging

An analysis of the personal papers of William Jennings Bryan sheds light on the factors that helped him become such an influential figure in bridging the ideational and policy fields. Bryan's influence was two-fold: (1) he framed Darwinism in terms that could appeal to a mass audience, connecting evolution to a legitimate public policy question, and (2) as a leader in the Presbyterian Church and a nationally-renowned politician, Bryan commanded legitimacy in both the ideational and policy fields, and he had personal relationships with leaders in both organizational fields. By leveraging his connections and national reputation, Bryan—more than any other individual—helped convert a private conflict into a public battle, which captured the attention of the nation throughout the 1920s and laid a foundation for nearly a century of recurring policy conflicts.

Framing and Policy Solutions

Bryan was a prolific and passionate writer, and he did not shy away from challenging anyone who did not see eye to eye with him. As a result, his personal papers provide a wealth of material that allow one to trace the development of the political ideas that he would use to challenge the teaching of evolution. In October 1921, Bryan articulated one of his earliest statements on the teaching of evolution in taxpayer-supported schools. Drawing on anecdotal evidence of students who turned to atheism or gave up the ministry upon learning about evolution, Bryan claimed that the teaching of evolution undermined Christian faith:

> I think I am on the side of a very large majority of the members of the churches and I think it is quite essential first that Christian colleges shall not employ teachers who are not themselves Christians…Second, I believe that Christian taxpayers should not permit the Bible to be attacked under the guise of either science or philosophy in public institutions where it can not be defended.[51]

Importantly, Bryan's argument against the teaching of evolution was rooted in a belief that taxpayers should not have to accept policies that contradict their fundamental beliefs. This was not a constitutional argument, as later creationists would make, but a populist one, which framed the issue in terms that non-elite citizens could understand.

[50] For example, see Szasz (1982) and Larson (2003).
[51] Letter from Bryan to Rev. Edward S. Worcester, 10/7/21, William Jennings Bryan Personal Papers, Library of Congress, Container# 34.

Two months later, Bryan elaborated on these views, arguing that there should be neutrality toward the question of human origins in public schools. There is a nuance to this position that is striking, given Bryan's strong religious views. Contrary to the anti-evolution movement leaders who would carry on his legacy, Bryan did not believe that the biblical creation story should be taught in public schools, only that teachers in taxpayer-financed schools should not be allowed to "rob the student of faith in God…by teaching him the brute doctrine, without a fact in the universe to support it and irreconcilable with the Bible."[52] He also argued that "every Christian tax-payer has a right to protest" such teachings.[53]

In short, Bryan feared that the teaching of evolution would undermine the faith of America's young Christians, just as it had done to Darwin. But concern about a loss of faith was not his only fear. He also believed that evolution posed a direct challenge to the authority of the Bible itself. Evolution was nothing less "the only real menace that Christianity has known in nineteen hundred years."[54] In a letter to the *New York Times*, Bryan stated his position in stark terms: "Those who teach Darwinism are undermining the faith of Christians; **they are raising questions about the Bible as an authoritative source of truth**. They are teaching materialistic views that rob the life of the young of spiritual values" (emphasis added).[55] To Bryan, a belief in evolution was irreconcilable with the biblical truths that were central to his faith and could only lead toward atheism and agnosticism. Thus, he could find no common ground with evolution-supporting scientists and academics, and he held even greater contempt for theistic evolutionists. Indeed, Bryan often lumped such people together with the atheists and agnostics in his many diatribes against them. In a letter to a professor at the University of Michigan, Bryan's disdain for theistic evolutionists was seething:

> You may have refused to carry evolution it its logical conclusion but those who come under your influence will carry it to its logical conclusion and you will, in my judgment, be responsible for the natural consequences even though you do not dare to follow it yourself. Theistic evolution is merely an anesthetic used to deaden the pain while the patient's religion is being removed. You may content yourself with giving the anesthetic and leave to your brother professors the task of removing the religion.[56]

Thus, by 1922, the basic framework of Bryan's position was well established. In his view, the teaching of evolution undermined both Christian faith and the authority of the Bible, and Christian taxpayers should not be subjected to a policy that contradicted their fundamental beliefs. Instead, he argued that they should rise up in protest and demand that public schools remain neutral on the question of human origins. And so the battle lines were drawn. On one side were Bryan and his supporters—fundamentalists and other conservative-leaning Protestants. On the opposing side were scientists, academics, and liberal Protestants, who Bryan collectively

[52] Letter from Bryan to Chester C. Platt, Madison, WI, 12/16/1921, Bryan Papers, Container# 34.
[53] Ibid.
[54] Letter from Bryan to Robert L. Kelly, New York City, NY, 12/30/1922, Bryan Papers, Container# 36.
[55] Letter from Bryan to the Editor of the *New York Times*, 2/16/1922, Bryan Papers, Container# 35.
[56] Letter from Bryan to Prof. J.B. Steere, Ann Arbor, MI, 8/28/22, Bryan Papers, Container# 35.

called atheists, agnostics, and theistic evolutionists. Of the three, the theistic evolutionists represented the greatest threat to Christianity, in Bryan's view.

During the early years of Bryan's crusade against evolution, his criticisms were devoid of any specific policy solutions. Instead, using mostly anecdotal evidence to support his claims, Bryan outlined a vaguely defined problem (the teaching of evolution in both public and Christian schools) and suggested a general remedy (deny public schools the ability to teach the topic). In April 1923, he finally had the chance to articulate a specific policy solution to the perceived problem. In a letter to Senator W.J. Singletary of the Florida Senate, Bryan urged the legislature to pass an anti-evolution bill, and he provided a general outline of the form the bill should take:

> I do not think there should be any penalty attached to the bill. We are not dealing with a criminal class and a mere declaration of the state's policy is sufficient, but I think it is very important that there should be a simple declaration, declaring it unlawful for any teacher to teach or any public school authority to permit to be taught in any of the public schools either atheism, agnosticism [sic]. In regard to the teaching of Darwinism or any other evolutionary hypothesis that makes man a blood descendent of the brutes, I would put in the two words, 'as true' and I would make it apply to any book used in the schools. A book which merely mentions it as an hypothesis can be considered as giving information as to views held, which is very different from teaching it as a fact. In many of our public institutions the professors teach the evolutionary hypothesis as if it were an established truth, and in many books that are being used in our public schools – even in the high schools – it is presented as an established fact. I have had brought to my attention books for the lower grades in which the idea of a brute ancestry is stated in child language.[57]

The most significant element of this statement is the fact that Bryan did not support a penalty for violating the law. Instead, he believed that a simple declaration of government opposition to the teaching of evolution would suffice. In the end, the legislature passed the first anti-evolution measure in the nation, a weak, non-binding resolution that drew directly from Bryan's letter.[58]

Why pass a law against evolution without a penalty to ensure compliance? Bryan did not offer a rationale for his position in the Florida case, but he did put forward two arguments when Tennessee was considering its anti-evolution bill in 1925:

[57] Letter from Bryan to Senator W.J. Singletary, Florida State Senate, 4/11/23, Bryan Papers, Container# 37.

[58] The text of the Florida anti-evolution measure read as follows: "Resolved by the House of Representatives, the Senate concurring, That it is the sense of the Legislature of the State of Florida that it is improper and subversive to the best interests of the people of this state for any professor, teacher or instructor in the public schools and colleges of this State, supported in whole or in part by public taxation, to teach or permit to be taught Atheism, Agnosticism, or to teach as true Darwinism or any other hypothesis that links man in blood relation to any form of life" (Wilhelm 1978, 333-334).

> [I]n the first place, our opponents, not being able to oppose the measure on its merits, are always trying to find something that will divert attention, and the penalty furnishes the excuse. That is the way they defeated the bill in Kentucky a few years ago. The second reason is that we are dealing with an educated class that is supposed to respect the law. It will be easier to pass the bill without a penalty attached. If the declaration made by the Legislature in the form of a law without penalty is not obeyed, a penalty can be added by a subsequent legislature.[59]

But Tennessee legislators thought otherwise, enacting a law that included a penalty, and, as Bryan predicted, the penalty provided just the excuse that the American Civil Liberties Union (ACLU) needed to challenge the new law. (The ACLU suit would result in the famous Scopes Trial, discussed below.)

Bryan's ideas are an important part of the story for two reasons. First, he was the individual most directly responsible for sparking the anti-evolution *policy* conflict. As a person of influence in both the religious and policy fields, his views carried significant weight and served three functions: (1) educating a mass audience about the inconsistency between evolution and Christianity; (2) molding public opinion against the teaching of evolution in taxpayer-supported schools; and (3) providing the raw material from which policy makers could fashion specific policy solutions across the states. Bryan's reach was far and wide: he traversed the country giving speeches, wrote columns for religious and secular newspapers at both the national and state levels, and published propaganda-like pamphlets that set forth his case. One such pamphlet, entitled "The Menace of Darwinism," was published in 1922 and distributed liberally to religious individuals throughout the country.[60] He also reached people through outlets such as the *New York Times* and through his own Populist newspaper, *The Commoner*, co-published with his brother. Additionally, legislators from several states solicited Bryan's advice concerning anti-evolution legislation, and he addressed several state legislatures in person.

Second, by declaring theistic evolutionists to be a dangerous enemy, Bryan polarized modernists and fundamentalists on the question of evolution and helped deepen the divide within American Protestantism as a whole. From Bryan's perspective, to be in favor of evolution—in any form—was to side with the modernists; to be against evolution was to side with the fundamentalists. This polarization was vital to the anti-evolution movement because it created a community of religious individuals whose very identities were forged from the evolution debate. Thus, although the modernist-fundamentalist divide preceded Bryan's activism, it was Bryan who was able to manipulate the divisions to his advantage, forging ties to the fundamentalist leaders who would later take up the fight in their respective states.

[59] Letter from Bryan to Senator John A. Shelton, Tennessee State Senate, 2/9/25, Bryan Papers, Container# 40.
[60] I counted 21 letters in the Bryan archives from people thanking Bryan for sending "The Menace of Darwinism" or noting that they read the speech in one religious publication or another. In some cases, the letter writers also noted that they took it upon themselves to distribute the pamphlet to others within their locality. And these are just the letters from the people who took the time to write.

Bridging Policy and Religion

Bryan was something of a lone agent, not only on the evolution issue, but in all of his public causes. On at least two occasions, interdenominational organizations attempted to draft Bryan to lead them. Bryan's response in both instances is revealing. In December 1921 and January 1922, Bryan received two letters from representatives of the National Federated Evangelistic Committee (NFEC), thanking him for lending his name to the group and for agreeing to assume the presidency of the organization.[61] The only problem was that Bryan never made such an agreement. In response, he turned down the offer, noting that he was too busy to give the organization the full attention it deserved:

> The announcement which you send surprises me and confirms the fear that I expressed that it is impossible for me to act as the head of your association without injury to the evangelists or unjust demands upon myself. It is not fair to your association to have a president who is inactive—if I fail to be active I am not only useless but I occupy the place of one who could be helpful.[62]

Undaunted, the NFEC wrote back to Bryan, imploring him to reconsider. In response, Bryan requested that his name be stricken from the organization's mailing list altogether. He also noted that the NFEC's work was not *his* work and he expressed some concern that his association with the organization was already being used as fodder by his political opponents. In his most revealing statement, Bryan wrote, "I feel a great interest in your work but it is not <u>my</u> work and I cannot allow you to decide for me what God wants me to do" (emphasis in original).[63] In the second example, discussed above, Bryan was drafted by William Bell Riley to assume the presidency of the World's Christian Fundamentals Association.[64] Riley attempted to entice Bryan by noting that he was the unanimous choice of the Christian Fundamentals Convention being held, at the time, in Fort Worth, Texas. But again Bryan declined the offer.

These two examples are instructive for a few reasons. First, Bryan was a nationally-recognized and popular figure, whom many religious leaders greatly respected. Because of his stature, Bryan was often sought after, not just to head organizations such as the NFEC and WCFA, but also to give speeches in congregations and other religious organizations throughout the country. He may not have wanted the burden of leading these religious organizations, but many organizations certainly wanted a piece of him. Second, Bryan's excuses about being too busy were not exaggerations. When Bryan set his mind to a new cause, he worked tirelessly to bring about his desired end, crisscrossing the country to give speeches and writing prolifically for both religious and secular publications. Third, Bryan worried constantly about his political enemies, and he feared that attaching himself to a single organization would undermine his cause. Interestingly, Bryan drew a sharp line between his anti-evolution activism and his

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[61] Letter from Rev. James Henry Larson, General Secretary, NFEC, Chicago, IL, to Bryan, 12/28/21, William Jennings Bryan Personal Papers, Library of Congress, Container# 34; Letter from James Henry Larson, General Secretary, NFEC, Chicago, IL, to Bryan, 1/10/22, Bryan Papers, Container# 35.
[62] Letter from Bryan to Larson, NFEC, 1/14/22, Bryan Papers, Container# 35.
[63] Letter from Bryan to Larson, NFEC, 1/28/22, Bryan Papers, Container# 35.
[64] Telegram from William Bell Riley, World's Christian Fundamentals Association, to Bryan, 5/3/23, Bryan Papers, Container# 37.

"political" activities, making the offhand remark in 1924, "I do not regard [Darwinism] as a political issue and do not discuss it in my campaign speeches, although I believe that nine tenths of the Christian people reject the idea that man is a descendent of the brutes."[65] Fourth, Bryan believed that *his* work was also *God's* work. As an agent of the divine, therefore, he did not see the need to entangle himself with just any religious organization. Indeed, the only religious organization that appears to have held any lure for him was the Presbyterian Church (PCUSA; the northern Presbyterian denomination).

Bryan was an elder of the Presbyterian Church, a regular participant in the denomination's committee structure, and one of the primary leaders of the fundamentalist faction within the denomination. Concerned about the direction that was being set for the Church by its liberal leadership, Bryan launched a campaign for the moderatorship of the denomination's general assembly, a key leadership position that would have enabled him to help set the Church's spiritual agenda. Despite several pleas by some of Bryan's confidants in the Church, he could not be dissuaded from his candidacy. In the end, he lost the race after a contentious fight. Summing up the reasons for his failure, Bryan blamed the liberals, who, he believed, were tainted by their views on evolution:

> Evolution was really the one root of discussion although it did not manifest itself in all of the issues under discussion. The most important contest was over the Fosdick case. The whole convention was set up in the interest of members favorable to Fosdick and many of the commissioners who voted for the minority report and reaffirmation of the church's position on several controverted points did not understand the connection between that question and the question of evolution. As a matter of fact, every liberal at the convention was an evolutionist and it was evolution that has so changed their views that some of them dissented from every vital Bible doctrine.[66]

In this quote, we can see the depth of Bryan's obsession with the evolution question and the extent to which he viewed himself on the right side of the issue. Coupled with the observation above that he viewed his work as God's work, it's not too big a leap to see why Bryan viewed his opponents as nothing less than infidels. Indeed, Bryan's disdain for theistic evolutionists is a running theme throughout much of his correspondence on the topic. In one representative statement, Bryan actually claimed that theistic evolutionists were more dangerous than atheists:

> I believe that the so-called theistic evolutionists are doing more harm than the atheistic evolutionists because they mislead. They talk about accepting the truth of science when they mean the guesses of scientists, and they refuse to explain to what extent they have discarded the Bible…While anyone has a right to believe or not to believe, it seems to me that honesty requires that one who

[65] Letter from Bryan to W.A. McRae, West Palm Beach, FL, 4/5/24, Bryan Papers, Container# 39.
[66] Letter from Bryan to Lewis Atherton, Jackson, MI, 7/5/23, Bryan Papers, Container# 38.

> advises shall be willing to make known his views on vital religious truths.[67]

It is important to highlight these views, because it helps set the evolution debate in a larger context. Bryan and the other opponents of evolution were waging a two-front battle: one within their own religious ranks against the forces of modernism (i.e., theistic evolutionists) and one outside the faith against the forces of atheism, agnosticism, and secularism (i.e., scientists and intellectuals). Thus, in order to understand why religious organizations decided to engage in a public policy battle over the teaching of evolution in the public schools, one must be attentive to how the battle lines were drawn within American Protestantism itself. In the case of the Presbyterian Church, there was great division among the body's membership on the question. Presbyterians turned the battle against each other and, in the process, stifled any attempt to develop a unified position for or against the teaching of evolution. Instead, the best they could attain was a compromise resolution, condemning the teaching of "materialistic" evolution (i.e., evolution via natural selection) in *Presbyterian* schools. Bryan objected strongly to the measure, arguing that "the Assembly, I am sure, did not catch the distinction between materialistic and theistic evolution. My own opinion is that theistic evolution is doing more harm than atheistic evolution because it lulls the students to sleep with the assurance that it does not affect his belief in God."[68]

One last point should be made about the Presbyterian fight. To Bryan, the battle against the modernists was very much about authority. In a letter to the mayor of New York City, Bryan commented on the tendency of the supporters of evolution to undermine the authority of the Bible. In Bryan's view, the competing authority was not the government, but scientists and their "materialistic" view of the world:

> You have doubtless noticed the excitement caused by the action of the Presbyterian General Assembly in reaffirming the church's faith on five points…Those who have been disputing those doctrines are evolutionists who have remodeled their views of the Bible to suit the evolutionary hypothesis. They accept scientists as authority instead of the writers of the Bible.[69]

In sum, we can draw two general conclusions from the preceding discussion. First, Bryan was extraordinarily influential in the anti-evolution movement, but his contribution to the cause was that of a political entrepreneur, rather than organizational leader. As discussed in the previous section, he was the first person to frame the problem as a matter of public policy, and he served as a rallying point for religious people of all faiths to join the cause. Bryan enjoyed numerous connections to religious individuals and organizations of all types throughout the country, but he managed to remain largely one step removed from their activities. The exception was his prominent role in the Presbyterian Church, a position which, in the end, contributed very little to the anti-evolution policy battle. Perhaps if he had won the moderatorship, he would have been able to steer the Presbyterians toward a unified position against all forms of evolutionary

[67] Letter from Bryan to Rev. W.M. Briggs, Chicago, IL, March 2, 1923, Bryan Papers, Container# 37.
[68] Report on the General Assembly, William Jennings Bryan, 1923 (undated), Bryan Papers, Container # 49.
[69] Letter from Bryan to Mayor John Hylan, New York City, NY, 6/12/23, Bryan Papers, Container# 37.

teaching, but his loss and the divisions that were created by the fight resulted in the denominational body remaining largely absent from the public challenge to evolution. Those Presbyterians that took a public stance did so without the explicit backing of their denomination.

Second, Bryan's form of political entrepreneurship was unique. Unlike the other prominent leaders involved in the anti-evolution movement, Bryan straddled both the religious and policy fields. Despite his contention to the contrary, Bryan's activism against the teaching of evolution was inherently political, and because of his standing as a national political leader, he was able to raise the profile of the issue in a way that few other individuals could have done. At the same time, his standing within the religious community endowed him with the credibility to speak on behalf of all people of faith (or at least those who subscribed to his particular brand of Christianity). Religious individuals and organizations recognized in Bryan a leader they could trust to represent their positions faithfully and a leader who could carry forth their political demands to a broad national audience. As we'll see below, fundamentalists' trust in Bryan placed him squarely at the center of the Tennessee anti-evolution trial in 1925 as the chief spokesperson and witness for the anti-evolution cause.

State-Level Policy Battles

Before turning to the Tennessee case, it is helpful to place Bryan's advocacy in the context of the larger national anti-evolution policy debate. Beginning in 1922, state legislatures throughout the nation began introducing legislation to ban the teaching of evolution in public schools. Following a speech by William Jennings Bryan to its state legislature, Kentucky became the first state to introduce an anti-evolution bill (Larson 2003, 48). Although the bill died, the action set a precedent for other legislatures to emulate, and with the help of Bryan's religious allies—particularly William Bell Riley—20 state legislatures would become embroiled in the anti-evolution policy conflict by decade's end. Of the states in which anti-evolution bills were introduced, only Florida, Mississippi, Oklahoma, and Tennessee managed to enact laws either banning the teaching of evolution or condemning the practice, and the Oklahoma law was subsequently repealed (because of an unrelated matter). A fifth state—Arkansas—came close to enacting anti-evolution legislation in 1927. When the legislative effort failed, it was passed by popular referendum one year later. Table 2 summarizes the five bills that became law, and Figure 3 depicts the geographic distribution of policy conflict in the 20 states where bills were introduced. As the map shows, much of the anti-evolution policy conflict was concentrated in the South, with pockets of activity in the Midwest, Northeast, and California.

Table 2. State legislative anti-evolution policy activities.[70]

State	# House Bills	# Senate Bills	Outcome	Date	Notes
States w/Anti-Evolution Measures That Became Law					
Arkansas	1	1	Became Law	11/16/1928	This bill was passed by the House on 2/9/1927 and killed by the Senate, but a similar measure became law by popular referendum on 11/16/28. The version that became law was identical to Mississippi's statute.
Florida	3	2	Became Law	5/15/1923	The weakest of all the anti-evolution measures to become law. This resolution condemned the teaching of evolution in public schools as "improper and subversive"; it didn't actually change school policy.
Mississippi	1	1	Became Law	3/11/1926	Banned the teaching of evolution in public schools; outlawed the selection or use of textbooks that taught evolution; and required the dismissal of any teacher or textbook commissioner violating the statute.
Oklahoma	4	2	Became Law/Later Repealed	3/24/1923	Passed as an amendment to a bill providing free textbooks. The amendment required that those books not mention Darwinian Evolution. The bill was later repealed, but for reasons unrelated to the anti-evolution rider. The repeal was subsequently upheld by public referendum.
Tennessee	2	3	Became Law	3/23/1925	Banned the teaching of evolution in public schools; prescribed a fine for violation of the statute. The statute was challenged by the ACLU in the famous Scopes trial.

[70] Wilhelm (1978)

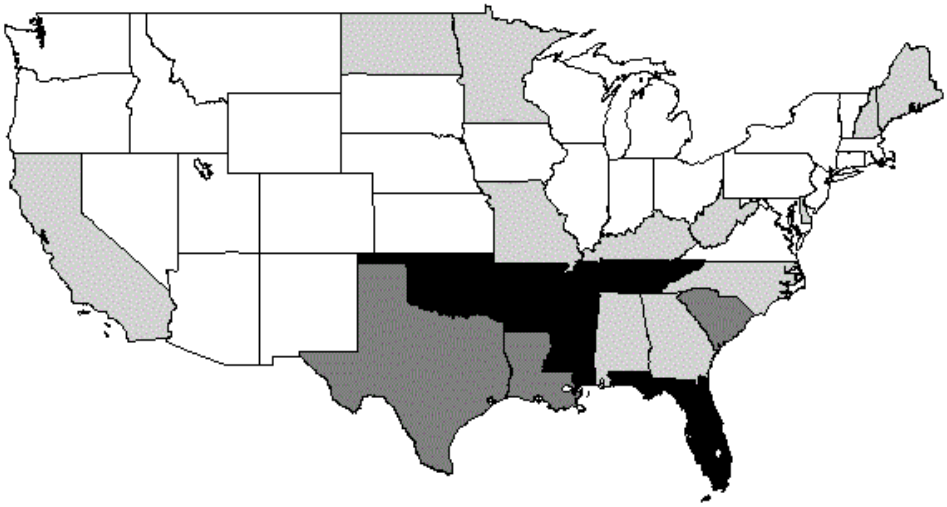

Figure 3. Map of 1920s anti-evolution legislative activity.[71]

The circumstances of each state-level policy battle are beyond the scope of this study and have been covered extensively elsewhere (Larson 2003; Lienesch 2007), but one case—Tennessee—helps to shed light on the dynamics between the battle of ideas and the nascent policy conflict during the 1920s. After a failed attempt to pass an anti-evolution bill in 1923, Tennessee legislators tried again two years later.[72] In the lead up to the 1925 General Assembly session, William Jennings Bryan gave a speech in Nashville, entitled "Is the Bible True?" Following the event, Bryan's supporters arranged to have thousands of copies printed and widely distributed to both the general public and members of the legislature (Bailey 1950, 475). Soon thereafter, on January 20, 1925, Senator John Shelton introduced a bill in the state senate to make it "unlawful for any person to teach the doctrine of Evolution in any of the Public Schools of Tennessee or in any school supported in whole or in part by public taxation" (Senate Bill 133; Wilhelm 1978, 342). Additionally, the bill included a misdemeanor penalty, such that "any person violating…[the] act shall be punished by a fine of not less than $10.00 and not more than $25.00 for each offense" (ibid). One day later, a nearly identical companion measure was introduced in the House of Representatives by John Washington Butler, but the fine was increased to a minimum of $100 and a maximum of $500 (House Bill 185; Wilhelm 1978, 344-345). A mere six days after its introduction, the House voted 71 to 5 to pass Butler's bill (p. 344), while the Senate Judiciary Committee recommended on January 29 that Shelton's bill be rejected (p. 342). Both bills seemed headed for defeat after the Senate Judiciary Committee recommended on February 4 that the House bill also be rejected (Bailey 1950, 478).

The next day, Shelton wrote to Bryan to inform him about the House's action and to seek his counsel concerning the best form that the bill should take to ensure passage through the

[71] States shaded black enacted anti-evolution laws banning the teaching of evolution in public schools or condemning the practice. States shaded dark gray passed such legislation out of only one chamber. States shaded light gray introduced bills that did not pass either chamber.

[72] SB 681 was introduced on March 16, 1923 in the Tennessee Senate, and HB 947 was introduced on March 19. After both the House and Senate Education Committees recommended that the bills be rejected, neither bill received further consideration by the full House or Senate (Wilhelm 1978, 331-332).

Senate.[73] In response, Bryan wrote back to Shelton to warn him about the dangers of attaching a penalty to the bills under consideration. Meanwhile, after an impassioned plea by Senate Speaker Lew Hill (a fundamentalist), Judiciary Committee Chairman H.G. McGinness asked that the measure's consideration be delayed by an additional five days to allow time for further study (Bailey 1950, 478; Larson 2003, 55). After a four-week recess—and despite Bryan's explicit warnings about the penalty section of the bill—the Senate Judiciary Committee reversed its prior recommendations and voted 7 to 4 to recommend adoption of the House bill (Bailey 1950, 480). Three days later, on March 13, the Senate voted 24 to 6 to adopt the Butler bill (p. 482). Despite acknowledging that "[n]obody believes that it is going to be an active statute," Governor Austin Peay signed the bill into law on March 21, 1925 (p. 483).

In a message to the legislature, the governor justified his signing of the bill using language that reflected the underlying battle of ideas being waged between fundamentalists and modernists: "Right or wrong, there is a deep and widespread belief that something is shaking the fundamentals of the country, both in religion and morals. It is the opinion of many that an abandonment of the old fashioned faith and belief in the Bible is our trouble in large degree. It is my own belief" (quoted in Bailey 1950, 484). In other words, Peay signed the bill not because it was the best public policy, but because the bill represented the best attempt under the circumstances to address the underlying battle of ideas. With Peay's pen stroke, Tennessee became the first state in the nation to ban the teaching of evolution in public schools *and* to attach a misdemeanor penalty to any violation of the law.

The counterattack against Tennessee's new law came swiftly. Led by the American Civil Liberties Union (ACLU), opponents of the evolution ban mobilized their forces to challenge the constitutionality of the new law in court. Interestingly, the ACLU was still a young organization at the time of this controversy. Established in 1917 as the National Civil Liberties Bureau, the organization's original mission was to provide legal counsel for antiwar protestors and conscientious objectors, but the ACLU soon shifted its focus to a broad defense of American labor, including public school teachers (Larson 1997, 61, 65). Although the ACLU is well known today for using the courts as a policy venue in which to test the constitutionality of state and national laws, during the 1920s the organization had yet to win its first court victory, and many of its founders were not even attorneys (pp. 65- 67). Instead, ACLU leaders during this period believed that legal challenges were beneficial as a means to raise public awareness about injustice, but few believed that the courts would actually be willing to guarantee the civil liberties of those being prosecuted (pp. 67-68). With these attitudes guiding the ACLU's Tennessee strategy, the organization issued a public call on May 4, 1925 for "a Tennessee teacher who is willing to accept our services in testing this law in the courts" (quoted in Larson 1997, 83).

Before long, the supporters of evolution found just the right man: John T. Scopes, a 24-year old science teacher and football coach from Dayton. After being courted by Frank E. Robinson, chairman of the Rhea County school board, Scopes agreed to participate in a test case, which was being orchestrated by Robinson, the ACLU, and two Dayton city attorneys who agreed to bring Scopes up on charges of having violated the law (Larson 1997, 88-90). According to Larson, Scopes was the "ideal defendant," who "would not alienate parents or

[73] Letter from Tennessee Senator John Shelton to Bryan, February 5, 1925, Bryan Papers, Container# 40.

taxpayers with soapbox speeches on evolution or give the appearance of a radical or ungrateful public employee" (pp. 90-91). Although Scopes did not regularly teach biology, he had filled in for the regular biology teacher and used the textbook, *A Civic Biology*, for review (p. 90). As discussed above, this textbook included ample treatment of evolution, as well as a biographical sketch of Charles Darwin.

After Scopes's staged arrest and (real) indictment, the impending trial began to take on a life of its own. In May, while attending a meeting of the World's Christian Fundamentals Association in Tennessee, William Jennings Bryan again stepped into the center of the anti-evolution controversy by volunteering his services to help prosecute the case. As Larson (1997, 100) argues, Bryan's entrance into the fray changed the fundamental dynamics of the court case from a simple constitutional test (over a public policy matter) to a debate about the legitimacy of evolution (i.e., another skirmish in the battle of ideas). After Bryan's participation was confirmed, the defense was joined by the nationally-known trial lawyer, Clarence Darrow. Despite the ACLU's resistance to Darrow joining their legal team, he successfully outmaneuvered the organization to assume the starring role in the case. Given Darrow's well-known agnosticism, the Dayton trial was on track to become not just a one-sided defense of evolution, but a full-scale battle between science and religion.[74]

The Dayton trial became an international media spectacle, as both sides attempted to use the forum to influence public opinion in their favor. Although Bryan attempted to place evolution on trial, he struggled to find anti-evolution scientists willing to speak against the theory. The only scientist who expressed an interest was George McCready Price, a proponent of "flood geology",[75] but he was overseas at the time of the trial and unable to participate (Larson 2003, 64-65). Instead, Bryan relied on his fundamentalist allies—William Bell Riley, John Roach Straton, and J. Frank Norris—to testify that the theory of evolution contradicted the Scriptures. On the other side, Darrow sought to bring in expert witnesses to speak to the generally accepted nature of evolution within the scientific community, but the judge ruled against his request. Barred from that line of defense, Darrow instead requested to cross-examine Bryan. Neither the judge nor Bryan objected, and Bryan took to the witness stand as an expert on the Bible. Under Darrow's withering questioning, Bryan demonstrated how little he actually knew about the two subjects he had been preaching about for years: the Bible and evolution. The most damaging line of questioning revealed that Bryan "had no notion about how Joshua lengthened the day by making the sun (rather than the Earth) stand still, whether the Noachian flood that allegedly destroyed all life outside the ark also killed the fish, where Cain got his wife, or how the snake that tempted Eve moved before God made it crawl on its belly as punishment" (p. 69). Additionally, Bryan admitted believing in an old-earth interpretation of the Bible, with each "day" of Creation representing an entire geological age.

Bryan's humiliation soon became public knowledge, but the episode did little to alter the case, because the jurors were out of the room when Bryan gave his testimony. Consequently, Scopes was convicted, and the ACLU promised to rehash the debate on appeal. But Darrow and his team would never get the chance to spar with Bryan again, as the great anti-evolution

[74] For a more colorful, compelling, and historically detailed account of the Dayton trial, see Larson's (1997) Pulitzer-prize winning book, *Summer for the Gods*.
[75] For an expanded discussion of "flood geology" and profile of George McCready Price, see Chapter 4.

crusader died in Dayton just a week after the Scopes verdict. On appeal, the anti-evolution statute was upheld and remained on the books until the 1960s, when it would once again became the fodder for public conflict (see Chapter 5).

Although Bryan's performance on the witness stand and the resulting humiliation he suffered in the national media is sometimes cited as proof that the Scopes trial marked the beginning of the end for the anti-evolution movement, the actual historical record presents a more mixed interpretation of the outcome. First, it should be stressed that Scopes and the ACLU actually lost their case. Consequently, the anti-evolution statute still carried the force of law, even if it was never again enforced in the state of Tennessee. Second, after the Tennessee episode, two more states passed anti-evolution prohibitions: Mississippi and Arkansas. Despite the controversy swirling around the issue, there remained enough popular sentiment against evolution to keep the issue on the policy agenda for at least a few more years. Third, by the end of the 1920s, the policy conflict had in fact begun to die out, as the attention of policy makers and the public began to wane. The public conflict over the teaching of evolution was no longer at the forefront of the public consciousness, and the anti-evolution movement was near total collapse.[76]

But the battle of ideas was still alive. Far from settling the question of human origins, the issue had only succeeded in driving a deep wedge between American Protestants, with fundamentalists holding firm to their belief that evolution was fundamentally irreconcilable with the Bible. Furthermore, the anti-evolution movement may have died as a public conflict, but that did not prevent a few key individuals and organizations from taking the fight out of the public sphere and back into the private domain. Because of their efforts over the following three decades, anti-evolutionism would be reborn during the 1970s as a reimagined movement focused on "creationism."

FOUNDATIONS OF CREATIONISM

As Lienesch argues (2007, 201), a subset of creationists associated with the earlier movement "retreated in order to regroup" during the 1930s. The resulting network of movement survivors included fundamentalist ministers (notably, William Bell Riley, Frank Norris, and T. T. Shields), as well as a small group of prominent anti-evolution lecturers (notably, George McCready Price and Harry Rimmer) (p. 202). Additionally, a small group of self-described scientists—mostly Seventh-Day Adventists—established their own organizations devoted to the scientific study of creation. Until the formation of these organizations, the anti-evolution movement had been dedicated primarily to prohibiting or restricting the teaching of evolution (i.e., the policy conflict). Afterward, anti-evolutionists began seeking their own answers to the "scientific and hermeneutical problems" associated with the biblical account of creation (Numbers 2006, 123). In other words, they decided to return to the central question of the battle of ideas, using the tools of science to find support for the biblical account of human origins in which they fervently believed.

[76] See Lienesch (2007, 171-197) for an excellent analysis of the demise of the 1920s anti-evolution movement.

The development of these organizations also represented a shift away from the reactive anti-evolution agenda of the fundamentalists to a more proactive agenda, centered around the idea of "creationism." As we'll see, creationism was not just about finding answers to the question of human origins; it was also an attempt to understand the origins of the universe itself. Consequently, much of the early creationist agenda focused on the geological sciences and questions concerning Noah's Great Flood and the actual length of the six "days" of Creation in Genesis.

The first organization to form was the Religion and Science Association (RSA), which was co-founded by George McCready Price and Dudley Joseph Whitney in 1935 (Numbers 2006, 123). Price was a Seventh-Day Adventist and well-known "flood geologist," who believed that the flood of Genesis was "the central geological event in the history of the earth" (p. 98). Whitney was the co-founder of the independent Lindcove Community Bible Church and a supporter of Price's scientific views. Together, their initial purpose in founding the RSA was to convert fundamentalists to Price's flood geology views. They soon learned, however, that not everyone they recruited to join the organization believed in the importance of the Noachian flood. As a result, the RSA came to a swift end in 1937, but not without making an important impact on the development of creationism as an intellectual endeavor. According to Numbers (2006, 136), the RSA

> brought the leading creationists into contact with one another, in some cases for the first time; it gave birth to the first creationist periodical…; and it prodded fundamentalists to select among the various interpretations of Genesis 1 rather than "believing all at once, endorsing all at once."…Perhaps most important of all, the failure of the RSA led directly to the formation of a more homogeneous and influential creationist organization: the so-called Deluge Geology Society.

The Deluge Geology Society (DGS) was founded in 1938 by Price and a group of his Adventist associates, who took proactive steps to minimize internal discord, by limiting membership to people who believed in both a six-literal-day Creation and the centrality of the Noachian flood in the geological history of the earth (Numbers 2006, 137). Unlike the RSA (whose accomplishments were few), the DGS actually attempted to make the study of flood geology more scientific, by undertaking "some of the earliest collective field research connected with creationism, including investigations of allegedly human fossil footprints and an abortive search for Noah's ark" (p. 140). The organization owed much of its early productivity to the leadership of Benjamin Franklin Allen, a Seventh-Day Adventist who was at the forefront of the successful 1920s-era campaign to ban the teaching of evolution in Arkansas by popular referendum (p. 138). Under Allen's leadership, the organization grew to 400 members in 1942 and over 600 members in 1945 (p. 139). At the height of its organizational success, however, the group began to tear itself apart over a dispute between Allen and Price about the age of the earth (p. 155).

Allen resigned from the DGS in 1945 after being removed from his secretarial position by the board of directors, but the DGS carried on for a couple more years under a new name: the

Society for the Study of Natural Science (Numbers 1998, 106). From his outsider position, Allen railed against Price and others who believed that the earth was millions of years old, in contrast to his literal, "young-earth" interpretation of Genesis. The result of the infighting was that "[f]rom the mid-1940s onward, flood geologists, especially within the Adventist tradition, enjoyed the freedom to choose either an old or young earth—so long as they admitted no earthly life before Eden" (Numbers 2006, 158). But more importantly, the dispute would lead to a major intellectual rift within creationism between "young-earth creationists" and "old-earth creationists," with the former group developing into leaders of the modern-day creationism movement.[77]

Another important organization was the American Scientific Affiliation (ASA), founded in 1941 by a group of evangelical scientists, with the goal of "producing and disseminating 'accurate' information on the relationship between religion and science" (Numbers 2006, 181). Central to the success of the organization was the work of J. Laurence Kulp, who Numbers describes as "one of the first American fundamentalists trained in geology, [who] contributed more than any other to splitting conservative Protestants into self-consciously separate camps of 'evangelicals' and 'fundamentalists'" (p. 184). In a paper written for the 1949 ASA annual meeting, Kulp systematically ripped apart Price's theory of flood geology, and he later did everything he could to undermine the theory in the ASA's publications.

Additionally, the ASA took on the issue of evolution, moving from a generally creationist position to one of theistic evolution. Leading the organization's efforts in this regard were Russell L. Mixter and J. Frank Cassel, "who did for biology what Kulp was doing for geology" (Numbers 2006, 195). The ASA's turn away from creationism is best exhibited by its publication of *Evolution and Christian Thought Today* in 1959. Edited by Mixter, the volume was a collection of essays that pushed the boundaries of evolutionary thought away from simple evolution-bashing to a rigorous scientific study of the empirical evidence for and against evolutionary theory. In one essay, written by biochemists Walter Hearn and Richard A. Hendry, the authors described Genesis as "a beautifully poetic narrative" (quoted on p. 201). Given the brevity of the narrative, however, they argued that it offered little information about the precise mechanisms by which life developed. Even more controversially, Hearn and Hendry asserted that "life arose from inanimate matter through a series of physico-chemical processes no different from those we can observe today" (quoted on p. 201).

Needless to say, conservative members both within and outside the ASA were alarmed by the organization's newfound positions toward evolution and flood geology. Consequently, the ASA suffered a schism in 1963, and the breakaway group formed the Creation Research Society (CRS). Although the CRS would eventually become involved in the policy battles of the next few decades, it should be stressed that the organization began its existence firmly rooted in the ideational field. Without this link to the ideational field and the creationist organizations that laid the foundation for its later work, the CRS would have had few new ideas from which to draw upon when the conflict returned to the public domain during the 1960s. The CRS and the role it

[77] Scott (1997, 266-272) provides a good overview of the distinction between creationists who believe in a young earth (just a few thousand years old) versus those who believe in an old earth (millions of years old). Among the latter, there is also a division between those who accept micro-evolution but not macro-evolution and those who accept neither.

played in helping to bridge the ideational and policy fields over the teaching of evolution is the subject of Chapter 5. Before turning to that story, in the next chapter we return to the field of science, where scientists were also busy laying a foundation to compete more successfully in the battle of ideas.

CHAPTER 4: POLICY CHANGE

> The [Biological Sciences Curriculum Study (BSCS)] came into being as a result of the dissatisfactions expressed by many with the *status quo* and attempted to provide solutions for such problems [facing the teaching of science]….Because change is always traumatic and because change is strongly resisted, universal acceptance had not been expected….Surprisingly, except for some who seemed to have some selfish interest such as a threat to a publishing venture of their own, the program has met with remarkably little criticism. Over one million of the BSCS textbooks are in use in the United States today and more continue to be sold.
>
> —William V. Mayer,
> Director, Biological Sciences Curriculum Study[78]

***

This chapter establishes the premise underlying the theoretical puzzle identified in Chapter 2: How did the supporters of evolution convince schools throughout the country to begin teaching the previously-taboo theory of evolution? What were the characteristics of this policy change, and why would we find it puzzling that creationists would be able to mount a strong challenge to the new policy status quo in the decades following change? Although this chapter introduces the key organizations that helped bring about policy change, the goal is not to provide an exhaustive account of the resources they supplied to the effort, but simply to establish that the period bounded by 1945 and 1970 did produce meaningful changes in the nation's policy status quo concerning the teaching of evolution in public schools. In Chapter 5, I explore the consequences of these changes for organizations on both sides of the debate.

I pick up the narrative below in the 1940s with the beginnings of the National Science Foundation (NSF) and its development during the 1950s into a champion for science-education reform. Using resources provided by NSF, the American Institute of Biological Sciences kicked off the first effort to rewrite secondary biology curricula in 1958 with the formation of the Biological Sciences Curriculum Study (BSCS). In 1963, the first BSCS textbooks were published. Although this event did not by itself change the national policy status quo, it did provide the impetus for major policy change in school districts throughout the nation.

At the same time, scientists and science educators began to organize themselves to repeal the last remaining prohibitions against the teaching of evolution in Tennessee, Arkansas, and Mississippi. Because of the advocacy of these groups, Tennessee legislators repealed the anti-evolution law that had been the subject of the 1925 Scopes trial. In Arkansas, they would have to adopt a different tactic, challenging that state's anti-evolution law in court with the assistance of their church-state separationist allies. In 1968, the U.S. Supreme Court struck down the Arkansas

[78] Mayer was also President of the National Association of Biology Teachers (NABT) when he delivered these remarks at a joint meeting of the NABT and American Association for the Advancement of Science in December 1966 (reprinted in Mayer 1967).

law as a violation of the First Amendment. Soon thereafter, the Mississippi law also lost a court challenge. The result was that by 1970, creationists had been dealt a serious blow to their cause, with all remaining anti-evolution laws being wiped from state statutes. Moreover, their principal policy solution—banning the teaching of evolution—was no longer a viable option. Faced with a new policy status quo and a devastating Supreme Court defeat, the creationism movement seemed on the verge of defeat once and for all. Figure 4 illustrates the key events during the time period covered by this chapter.

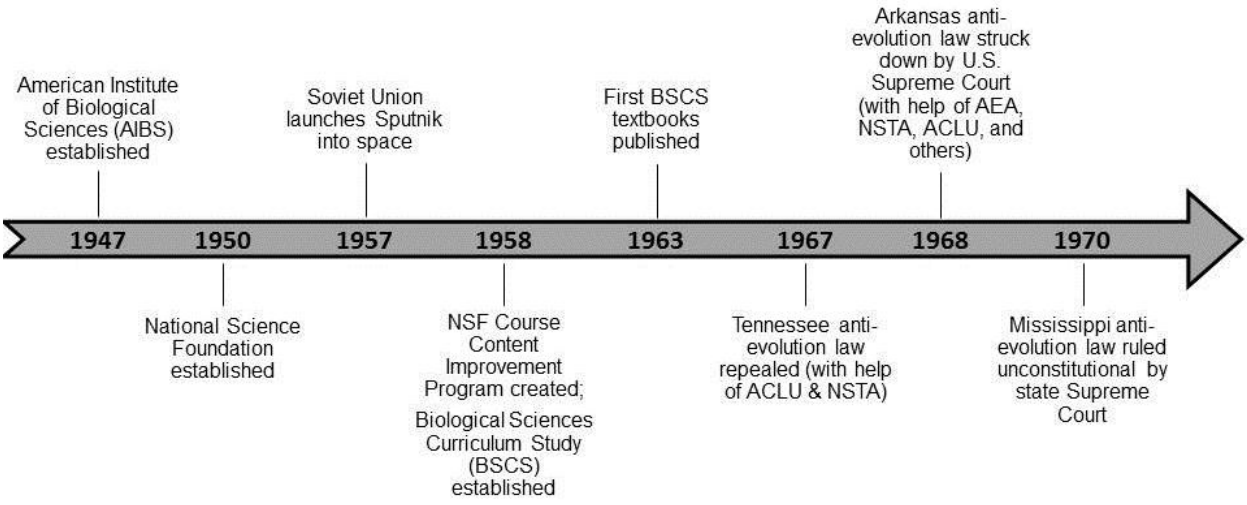

Figure 4. Timeline of key events, 1947-1970.

STATE-LEVEL POLICY MAKING AND NATIONWIDE POLICY CHANGE

Most studies of policy change explore the sustainability of new policies *enacted* at the national level (i.e., legislation passed by Congress and rules approved by the Executive Branch). But policy change need not originate in Washington in order to have nationwide impact. New policies initiated in one state can spread to other states through different mechanisms of policy "diffusion," such that, over time, the cumulative result is a shift in the *national* policy status quo (Savage 1985; Walker 1969).

Unfortunately, exploring the mechanisms of national policy change via state-level policy making is not always as straightforward as simply tracing a new federal law from its source in Congress through implementation by the bureaucracy. Further, tracing the development of a policy over time and across multiple levels of government is not a uniform process across policy fields. Some policy fields, such as national defense, concentrate governmental authority in national institutions, such as Congress, the president, and the relevant executive agencies; but other policy fields concentrate governmental authority in local institutions, leaving few mechanisms of control for national decision makers. Consequently, it is important to recognize the nature of the policy field under consideration in order to guide one's analysis appropriately.

In the case at hand, although the policy fight represents a battle between the institutions of religion and science, the conflict itself has been waged in a policy field organized around

public education.[79] As a result, many of the most consequential policy decisions in the case at hand have been made at the state and local levels of government—by local and state school boards, state textbook commissions, and state departments of education—and the primary role of the federal government has been to serve as a catalyst of state-level policy change through the provision of material and ideational resources. As I will demonstrate in this chapter, although the federal government set in motion the process that led to a shift in the national policy status quo, it was the actions of numerous state and local institutions of government that cumulatively led to systemic policy change across the United States.

Rather than tracing the relevant policy changes in all 50 states across the decades, I assume that some states were more consequential than others in helping to define the character of the national debate. The narrative I develop in this chapter and the next chapter weaves in and out of key states, identifying consequential organizations and their leaders and demonstrating how, through their national networks, they were able to influence policy change across the United States. Although this approach may skim over individual policy skirmishes, it has the advantage of keeping the focus of analysis on the key organizations on each side of the debate, which will prove useful to the second major goal of this study: explaining why creationists were able to remobilize in the wake of major policy defeats and why scientists were unable to consolidate their policy victories.

POLICY CHANGE

The Federal Government Picks a Side

Although the evolution policy battles of the 1960s would play out at the state and local levels of government, the origins of the dispute during this second era of policy conflict can be traced back to the actions of the federal government during the 1940s and 1950s. In the years following World War II, the United States found itself facing a looming new international rival—the Soviet Union. Among the threats recognized by national policy makers was the Soviet Union's increased attention to science and technology, while, at the same time, the United States's scientific apparatus appeared incapable of rising to the Soviet challenge.

In 1945, Vannevar Bush, Director of the Office of Scientific Research and Development, penned a report for President Franklin D. Roosevelt, which captured the nation's angst and effectively framed the national debate around science and technology policy for years to come. Central to Bush's argument was the recognition that the United States needed to do a better job developing a workforce with the skills necessary to undertake careers in science and technology. To that end, Bush offered three policy recommendations of significance to this study. First, citing a precedent in the nation's system of agricultural colleges, he developed a new rationale for why the U.S. should get more involved in education policy-making, a field historically under the control of state and local governments. To that end, he argued, the federal government should

[79] Recall that the primary question motivating the policy fight is whether or not government should remain neutral with regard to the teaching of evolution and/or creationism in public school classrooms. Consequently, public schools are the real battleground in the policy fight, and federal education laws notwithstanding, education policy has historically been and continues to remain largely within the purview of state and local governments (Katznelson and Weir 1985, 29).

extend its budgetary commitments to include support for education in the natural sciences. Second, Bush argued that a new federal agency should be created to oversee and coordinate a nationwide program of increased investment in basic research and scholarships for students. This recommendation resulted in the creation of the National Science Foundation, from which the 1950s curriculum reform movement was launched. Finally, Bush cautioned that in order to preserve freedom of inquiry, research and educational institutions needed to have control over their own personnel and methods of research. In other words, although the federal government's resources should be used to incentivize policy change, the government should keep a respectful distance from the business of science (Bush 1945).

During the 1960s and later periods, the idea of scientific autonomy would provide a strong argument in favor of allowing scientists, not the general public, to determine which topics to teach in the public schools. In short, Bush's ideas helped frame the debate over evolution in terms favorable to scientists and their supporters, and his policy recommendations helped establish the institutional infrastructure for scientists to begin breaking down the barriers that had been holding them back in the nation's secondary schools.

Five years later, Congress established the National Science Foundation (NSF) (Public Law 81-507).[80] Although NSF's initial concerns about the state of the scientific workforce focused on undergraduate and graduate education, it would soon shift its attention to secondary schools.[81] In its 1953 annual report, NSF officially acknowledged—for the first time—the importance of *high school* science education, noting its hope "that ways and means can be found through the science teachers at the secondary school level to identify and motivate toward science those students who should become scientists" (National Science Foundation 1953, 54). Despite NSF's early recognition of the need to improve science education in the nation's high schools, it would not possess the political mandate to tackle the problem for another several years.

On April 3, 1956, President Eisenhower established the National Committee for the Development of Scientists and Engineers (NCDSE), composed of citizen representatives from state and local government, science, and industry, with staff support from the National Science Foundation. Following its first meeting, the NCDSE established two working groups: one devoted to "increasing the number and improving the quality of engineering and scientific technicians" and the other focused on exploring "ways and means of encouraging the long-range improvement of science and mathematics programs in the elementary and secondary schools"

[80] Legislation to implement Bush's recommendations, including the establishment of an agency devoted to basic research and science education, was initially introduced in 1945. In 1947, Congress sent a bill to President Harry Truman for his signature, but he vetoed the legislation, because it did not give him the authority to hire the agency's director. After three more years of negotiations, President Truman signed into law a bill establishing the National Science Foundation. For a brief history of NSF, see National Science Foundation, "A Timeline of NSF History," http://www.nsf.gov/news/special_reports/history-nsf/timeline/index.jsp, accessed October 7, 2010.

[81] The National Science Foundation's 1952 annual report included a lengthy discussion about scientific manpower, comparing U.S. levels of growth to the Soviet Union, and decrying the loss of college graduates in the sciences to other careers. According to NSF, "[p]art of the reason is economic. The student weighs the costs of three or four years of graduate study against the attractive salaries he finds he can command upon graduation" (National Science Foundation 1952, 28). To remedy this problem, NSF developed a graduate fellowship program "to help as many students as possible across the bridge between undergraduate and graduate study" (pp. 28-29).

(National Science Foundation 1956, 17-18). The group working on elementary- and secondary-schools released its report in June 1956, which included the recommendation that "[a] reevaluation should be made of the scope, content, and quality of elementary and secondary school science and mathematics programs by the appropriate agencies in communities and States," including "the quality and content of mathematics and science textbooks and other teaching materials" (p. 18).

Although the NCDSE's support was helpful to the advancement of NSF's goals, science-education historian John Rudolph (2002) argues that the NCDSE's recommendations were only taken seriously because NSF leaders successfully co-opted the NCDSE's agenda before its first formal meetings. In early discussions between Harry Kelly, head of NSF's Divisional Committee for Scientific Personnel and Education, and Howard Bevis, chairman of the NCDSE, an accord was reached in which "[e]ssentially NSF would initiate and direct programs and NCDSE would generate public support" (p. 78). From NSF's perspective, this agreement was critical because of the agency's desire to ensure that scientists, not educators, remained in control of the agenda (pp. 79-80). As Rudolph notes, "educators were to be tolerated only to provide the appearance of cooperation. Any substantive decisions would be made by those within the NSF-led scientific community" (p. 80).

By the end of 1956, NSF was well on its way toward developing a systematic plan to address the shortcomings in the nation's science education apparatus, but its work would be greatly accelerated by an event outside of its control. In October 1957, the Soviet satellite Sputnik was launched into space, helping to set American science education on a new historical trajectory. Although the Soviets' achievement did not come as a surprise to many American scientists, it was a rude awakening to the American public and policy makers alike. In its own assessment of the significance of Sputnik, NSF wrote:

> To the American public…the first launching became a symbol of competition between Russian and American science, and a sign that we had "lost" a "scientific race." To the extent that the symbol became identified with such a "race," it was erroneous and destructive…But to the extent that the symbol called attention to certain marked deficiencies in the environment in which our scientists operate, and pointed to the need for improvements in our scientific education and strengthening of our basic research, it was accurate and useful. (National Science Foundation 1958, 3)

Although the psychological effects of Sputnik on the American public were significant, this event is often overemphasized by historians as the precipitating event that led to the establishment of the Biological Sciences Curriculum Study. In actuality, the nation had already embarked upon a course of high school science reform. The launch of Sputnik merely accelerated the process, by bringing the issue to the attention of the public and an expanded set of policy makers (Mayer 1986, 485; Rudolph 2002, 106-111).

Three months after the launch of Sputnik, President Eisenhower asked Congress to increase the Federal government's commitment to science education, requesting a substantial

increase in funding for NSF's science-education activities and "additional temporary Federal programs to strengthen general education and to strengthen science education in our State and local school systems" (National Science Foundation 1958, 7-8). In response, Congress passed the National Defense Education Act of 1958, "which constituted the first general Federal aid-to-education legislation since the Morrell Act of 1862" (p. 9). In the opening paragraphs of the new law, Congress set forth a strong affirmation of the nation's commitment to scientific research and science education:

> The defense of the Nation depends upon the mastery of modern techniques developed from complex scientific principles. It depends as well upon the discovery and development of new principles, new techniques, and new knowledge….It is therefore the purpose of this Act to provide substantial assistance in various forms to individuals, and to States and their subdivisions, in order to insure trained manpower of sufficient quality and quantity to meet the national defense needs of the United States. (Public Law 85-864, Sec. 101)

Although much of the funding authorized under the new law was directed toward the Health, Education, and Welfare Department, the strong policy language adopted by Congress gave additional authority to NSF to expand the scope and scale of its science-education reform initiatives.

To that end, NSF created the Course Content Improvement Program, which established several independent working groups charged with revamping secondary-school curricula in a few key subjects, including physics, mathematics, chemistry, and biology. According to Rudolph (2002, 2), "[t]he defining characteristic of these projects was the prominent role of the federal government and a handful of elite academic research scientists as the architects of change. In a unique collaborative effort, the United States Congress appropriated funds, the National Science Foundation (NSF) provided guidance, and scientists of various sorts worked together to realize their vision of what science education should be."

In fiscal year 1958, NSF obligated about 1.7 percent of its $49,750,000 budget to the Course Content Improvement Program (National Science Foundation 1958, 116). The following year, Congress increased NSF's total appropriation to $136,000,000, and NSF increased its commitment to curriculum reform to 4.4 percent of its overall budget (National Science Foundation 1959, 134). With nearly $7 million in hand (over two years), NSF was finally in a strong financial position to incentivize significant policy change in science education. Of course, it had to tread very carefully, as education policy was still widely regarded as being in the domain of state and local policy makers.[82] But that didn't stop NSF from doing what it believed necessary to ensure American competitiveness against the Soviet Union. Declaring that "courses in physics, chemistry, and biology as taught in most secondary schools not only contain much

[82] This fact was explicitly affirmed in the National Defense Education Act of 1958, which stated, "The Congress reaffirms the principle and declares that the States and local communities have and must retain control over and primary responsibility for public education The national interest requires, however, that the Federal Government give assistance to education for programs which are important to our defense" (Public Law 85-864, Sec. 101).

obsolete material, but—even more important—represent a point of view that has long been discarded by the scientists working in these areas," NSF seized the opportunity it had been handed to drive major changes in the nation's high school science curriculum (National Science Foundation 1958, 64).

With the establishment of the Course Content Improvement Program and the allocation of a significant percentage of its budget to curriculum reform, NSF had essentially chosen a side in the evolution-creationism debate. By throwing its weight behind scientists and intervening in a policy domain traditionally under the control of state and local governments, NSF gave scientists the ammunition they needed to challenge the policy status quo in the nation's public schools. Although NSF's principal objective was not to introduce evolution into the public schools, the effect of its actions was to create the political opening necessary for the advocates of evolution to pursue policy changes at the state and local levels of government.[83]

As noted in the previous chapters, the policy conflict of the 1920s boiled down to the question, "Should public schools take sides or remain neutral in the battle of ideas?" The earlier conflict had been settled in favor of neutrality or outright opposition to evolution by state and local governments. In this new period of conflict, the federal government finally joined the battle—firmly in favor of scientists (and, thus, the proponents of evolutionary theory). As I describe below, this change in the political environment was necessary for policy change to occur on a nationwide scale, over a relatively short timeframe.

Genesis of the Biological Sciences Curriculum Study

Although NSF provided the initial funding and institutional support to launch the nationwide curriculum reform movement, the actual work of developing new teaching materials was carried out by several independent working groups, including the Physical Science Study Committee, the School Mathematics Study Group, the Chemical Bond Approach Project, the Chemical Education Materials Study, and the Biological Sciences Curriculum Study (National Science Foundation 1960, 102). The Biological Sciences Curriculum Study (BSCS) was established in 1958, and over the next five years, it would create a starkly different alternative high school biology curriculum to compete against the materials currently in use in the nation's public schools.[84] As the preceding section demonstrates, the BSCS and all of the curriculum study committees owed their existence to the National Science Foundation and the broad support

[83] We can look at such political openings from a couple of theoretical perspectives. McAdam (1982) describes them as shifts in the "political opportunity structure," which have the potential to produce a restructuring of the power relations in society, thereby creating an opening for advocates of policy change to make their move. On the other hand, Kingdon (1995, 182) employs the concept of a "policy window," which is the point in the policy process at which skilled "policy entrepreneurs" have the opportunity to "hook solutions to problems, proposals to political momentum, and political events to policy problems." In so doing, they make it possible for a given policy issue to make it onto the governmental agenda for consideration. In this study, I focus on the organizational policy entrepreneurs and their allies that helped bring about nationwide policy change, but there is no doubt that structural changes in the political environment, brought about by the Cold War, helped ease the way for the supporters of evolution to contest the previous policy status quo.

[84] Most high school biology course materials in use before this time focused on descriptive classification systems, "interspersed with prescriptive material on human hygiene, behavior, and personality, and the assorted applications of this knowledge in everyday life" (Rudolph 2002, 183).

of decision makers in Congress and the executive branch. But equally important to the long-term success of the BSCS was the material and leadership support provided by two non-governmental organizations: the American Institute of Biological Sciences (AIBS) and the National Research Council (NRC).

AIBS was the brainchild of Elmer Butler, president of the Union of American Biological Societies, and Detlev Bronk, chairman of the NRC, who set out to unify what had historically been a highly fragmented scientific discipline (Bronk 1972). AIBS began its institutional life in 1947 as an arm of the NRC's Division of Biology and Agriculture, with the explicit understanding that it would later "evolve into a separate organization" (p. 6). From its inception, even the organizers of the new Institute were skeptical that it would be able to bring together so many disconnected groups—representing all of the fields of biology—but they persisted in their work because of their belief that unification was necessary to advance the discipline as a whole. As in any coalition of distinct interests, there was considerable distrust and fear that some of the member organizations would grow to dominate the nascent Institute, and for the first few years, financial support from member societies was "meager" (American Institute of Biological Sciences 1972, 11-12). According to AIBS' own organizational history, "[i]t is highly doubtful that AIBS would have survived its first few years without the generosity of the [National Research] council in providing office space and logistical and staff support" (p. 12). But after six years under the NRC (1948-1954), members of the AIBS governing board decided that they were in a strong enough financial position to break out on their own (p. 13).

In 1955, one of AIBS' first acts as an independent organization was to create a standing committee on Education and Professional Recruitment, charged with "develop[ing] a vigorous program of education at all levels which would become the basic policy of the Institute" (Grobman 1959, 21). Over the next three years, AIBS began laying the groundwork for a major overhaul of the teaching materials and pedagogical techniques used in the study of biology. According to AIBS President Arnold Grobman, "The result of this preliminary work is the identification of AIBS with biological sciences curriculum and course content studies in the minds of interested persons and common acceptance of the responsibility AIBS has in sponsoring these studies" (p. 21). The ongoing curriculum work at AIBS was timely because it coincided with the science-education reform efforts already underway at NSF. Consequently, when NSF received an infusion of federal funds in the wake of Sputnik, it selected AIBS to establish and administer a course content improvement program for the biological sciences. Thus, the Biological Sciences Curriculum Study was formed in 1958 with a $143,000 federal grant to AIBS, which was followed the next year by an additional $595,000 (Engleman 2001, 1).[85]

Under the leadership of director Arnold Grobman and board chair H. Bentley Glass,[86] the BSCS steering committee quickly set to work determining the group's priorities and areas of

[85] The BSCS remained under the financial control of AIBS until 1963, when fiscal management was transferred to the University of Colorado. AIBS lost the right to administer the BSCS after being fined by NSF for mismanagement of federal funds (Engleman 2001, 9-10).

[86] At the time each man joined the BSCS, Grobman was working as the director of Florida State Museum and Glass was a professor of biology at Johns Hopkins University. Glass also served as president of AIBS at the time the BSCS was formed.

focus. To that end, four committees were established, which focused on curriculum, laboratory instruction, gifted students, and teacher preparation. The four committees, in turn, decided to focus their efforts on creating a new high school biology course, which would cover nine fundamental themes in biology, including the theory of evolution.[87] From the outset, there was never any doubt about the wisdom of including evolution in the new high school material. As a founding member of the Society for the Study of Evolution (Rudolph 2002, 149), Grobman himself believed that "[e]very educated person should be able to count among his philosophical resources an understanding of evolution, of genetics, of energy relationships, as well as principles of optics and mechanics and what makes a sputnik go" (Grobman 1959, 22). And that belief was shared by the other members of the steering committee. According to Rudolph (2002, 149):

> [I]t is not surprising that at the first Steering Committee meeting, when the original nine themes were laid down, evolution was included without much comment. It would have been impossible for those present in the year of the *Origin's* centenary to imagine biology without it. Indeed, as a topic it was actually included twice, once as one of the key themes and again as one of the major divisions of biological subject matter.

Following the identification of its scope of work, the BSCS organized three summer writing conferences in 1960-1962 at the University of Colorado. At each conference, writers worked in teams of two, comprising one university professor and one high school teacher, and each team was charged with writing a single textbook chapter or laboratory exercise. Following the first summer conference, BSCS writers drafted three "experimental" biology textbooks, each adopting a different approach to the study of biology: molecular, environmental/ecological, and cellular/developmental (also known as the blue, green, and yellow versions, respectively) (Engleman 2001, 3). Over the next two years, the textbooks were subjected to an intensive protocol of "classroom testing, feedback, reviews by committees, and testing in experimental laboratories," which involved 1,000 teachers and 165,000 students in 47 states (p. 4).

By 1963, the final manuscripts of the new BSCS course materials were ready for publication. Despite NSF's fiscal sponsorship of the project, the federal agency was in no position to force, or even advocate to, school districts to adopt the new textbooks. Instead, official NSF leaders believed that "the new course materials have been prepared by leading scientists and teachers and that their own merit should determine their adoption or rejection by schools, in competition with other available materials" (National Science Foundation 1964, 77).[88] Private sector competition, then, was the name of the game for disseminating the new

[87] The nine themes were evolution, diversity of types combined with unity of pattern, genetic continuity, complementarity of organism and environment, biological roots of behavior, complementarity of structure and function, and regulation & homeostasis (Engleman 2001, 2).

[88] According to NSF's 1964 annual report, agency policy dictated that NSF was not to "support or encourage activities which could reasonably be construed as constituting an endorsement of courses, textual materials, and related instructional devices by the Federal Government or an attempt by the Government to persuade school systems to adopt such materials. Fundamental policy in American education places responsibility for the choice of curricula for elementary and secondary schools, colleges, and universities in the hands of teachers, school administrators, school boards, faculties, and other appropriate local authorities. Hence, the Foundation directs that

course materials throughout the country. Consequently, the BSCS invited publishers to submit proposals for the right to publish each of the three textbook versions it had produced, in addition to an assortment of laboratory instructional materials. Under the publishers' contractual arrangement, the BSCS received a 20 percent royalty from each publisher, which went back to the U.S. Treasury (Engleman 2001, 7). In 1963, Houghton Mifflin, Rand McNally, and Harcourt Brace and World were chosen to publish the blue, green, and yellow versions of the new BSCS textbooks, respectively (pp. 6-7), setting in motion the process that would lead to major policy changes at the state and local levels of government concerning the teaching of evolution in public schools.

The Aftermath

The year 1963 was pivotal in the history of the evolution-creationism conflict. Although the new BSCS textbooks were developed because of the prior work of the National Science Foundation and its partner organizations, the publication of those course materials in 1963 created the first real opportunity for state and local governments to consider introducing modern biology topics, such as evolution, into their high school science curricula. This singular act was directly responsible for reigniting the long dormant policy conflict over the teaching of evolution in public schools. No longer could school board members, school district officials, or state government employees remain neutral on the topic. When faced with the choice of competing textbooks, they would have to decide whether or not to embrace the new approach to the study of biology, including its emphasis on evolutionary theory, or remain tied to the old way of teaching biology.[89] Just as the federal government chose a side during the 1950s, state and local governments of the 1960s would face a similar choice.

The BSCS textbooks marked the beginning of the first real change to the national policy status quo on the question of whether evolution should be taught in public schools. The publication of the BSCS textbooks was not a policy enactment in the traditional sense. In actuality, the policy changes set in motion by the new textbooks played out over a period of years, beginning with the decision by NSF to commit federal funding to AIBS to establish the BSCS, which resulted in the curricular products of the BSCS' labor. These new books, in turn, presented state and local policy makers with a new set of textbook options to consider when designing their science curricula.[90] As discussed above, the BSCS textbooks were the distinctive

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funds granted for course content improvement projects shall not be used in any way to promote the adoption of the products of such projects by schools or colleges. Grants are to be used only for the development of information about them. Textbooks, laboratory guides, films and other audiovisual aids, laboratory demonstration apparatus, supplementary readings and other materials produced by NSF-supported projects are made generally available through commercial channels, at prices competitive with similar materials from other sources. There is no financial advantage for schools in using the products of Foundation-supported endeavors" (National Science Foundation 1964, 77).

[89] It should also be noted that, during the 1960s period of policy change, policy makers did not make an effort to "balance" out evolution by allowing creationism to be taught alongside evolution in the classroom (as they would attempt to do during the 1970s). This era was clearly distinguished by state and local governments choosing scientists' preferred policy position (teaching evolution) over that of their opponents (excluding evolution from the curriculum).

[90] I follow Pierson's (2005) advice for tracing the development of policies over time. What matters most is not the "moment" of policy enactment, but what happens before and after the pivotal policy event. In this case, the historical events leading up to the 1960s, combined with the independent efforts of biologists to organize their discipline,

product of multiple historical events, particularly the Cold War, the launch of Sputnik, the creation of the National Science Foundation, and the efforts by biologists of different stripes to begin unifying their discipline. According to Rudolph (2002, 198-199):

> The [new curriculum] products, as a whole, cannot be understood apart from the historical context in which they were generated…The inclusion of evolutionary biology can be understood as both a tactic in the postwar disciplinary competition with physics and a jab at the ideological control of genetics and evolution in the Soviet Union and religious conservatism in the United States. And the numerous activities and intellectual space devoted to scientific inquiry emerged from the scientists desire to showcase the intellectual power of science to combat all forms of dogmatism—religious, ideological, and even curricular (as found in the life-adjustment program).

These historical antecedents, in turn, are important to explaining what happened *after* the new textbooks were published. By all accounts, the new BSCS materials and their imitators achieved a remarkable degree of penetration in schools throughout the country. According to William Mayer, the BSCS's second director, the new textbooks were in use by 50 percent of American high school students just a few years after publication, and by the late 1960s, "[t]he teaching of organic evolution [had become] widely respectable" (Mayer 1986, 488-490). Further, in its official history, the BSCS claims that not only were competing textbooks changed "to mirror the fundamental concepts of BSCS materials," but also

> [b]y 1966-67, a quarter of incoming college freshmen had learned from a BSCS textbook in high school. That number rose to 80 percent in 1970-71. By the end of the life of the first commercially distributed editions, in 1968, more than 2.25 million copies had been sold—enough to supply one book for each student studying biology in American secondary schools. (Engleman 2001, 25)

In many ways, the rapid adoption and widespread popularity of the BSCS textbooks is surprising. As noted above, NSF was legally banned from marketing or advocating on behalf of the new textbooks. Consequently, the job of defending and selling the new textbooks fell to BSCS staff, in concert with their publishing partners. Whether cultural opposition to evolution had softened or the new course materials were simply better than the textbooks of the past, explaining why the new materials were such a runaway hit is beyond the scope of this study. It is likely that some combination of the historical forces described above, in combination with the increased advocacy of scientists across the country, helped convince local and state decision makers of the need to accept the changes happening around them.

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created the conditions necessary for policy change to occur. In the aftermath of publication, the textbooks began to spread to states and school districts throughout the country. Over time, the adoption of BSCS textbooks and their imitators produced a stable new policy status quo.

To be sure, not everyone accepted the evolution-oriented materials without a fuss, but such opposition was isolated to only a few states (Nelkin 2000, 46).[91] Creationists were simply not yet in a strong enough position to resist the changes happening around them. Their relative weakness, in turn, created an opening for a new set of pro-evolution actors to mobilize in defense of the emerging new policy status quo, while mounting an all-out assault against the remaining vestiges of the 1920s creationism movement. In the next section, I describe the rise of the pro-evolution alliance of scientists, science educators, and church-state separationists before taking stock of the new policy status quo that their actions helped create.

A NEW POLICY STATUS QUO

Overturning the Bans on Evolution

With new textbooks spreading throughout the country, evolution was finally beginning to gain a foothold in public school classrooms. Even though the quality of instruction often varied from one school to the next, the fact that students were now being exposed to the theory in explicit terms was an historic achievement for science educators, who previously had to contend with high school biology course materials that were silent on the subject. Despite these changes, the 1920s-era prohibitions against the teaching of evolution remained ensconced in state law in Tennessee, Arkansas, and Mississippi. To ensure nationwide coverage of evolution in secondary schools, they would need to adopt a new set of policy strategies to wipe the three punitive anti-evolution laws off the books in those states. Together, scientists, science educators, and church-state separationists would mount a strong political and legal challenge to the problematic statutes, taking the fight to the judicial and state legislative policy arenas.

In both Tennessee and Arkansas, the supporters of evolution turned first to their state legislatures. Arkansas kicked off the effort in 1959, when legislators introduced a bill in the state House of Representatives to overturn the state's ban on evolution. No action was taken, and the bill was withdrawn by its sponsor (Wilhelm 1978, 404). Then, in 1961, two identical bills were introduced in both chambers of the Tennessee Legislature to repeal the state's ban on evolution. Both died in committee (pp. 405-406). Four years later, Arkansas legislators tried again. Although the new Arkansas bill was reported favorably by the House Committee on Education, it never came up for a vote on the House floor (p. 409).

Following these failed legislative episodes, the supporters of evolution teamed with several national organizations to initiate lawsuits in both states. Even before the first lawsuits were filed in 1967, however, there is evidence of science teachers considering their legal options much earlier in the decade. In 1963, for example, the *Dallas Morning News* ran an article in which two Memphis teachers said that they would be willing "to go to court over [the Scopes 'monkey' law] if it will help us get that law repealed." The teachers had previously been ordered by their school administrators to cease discussion of the theory of evolution in their classrooms.[92] Whereas scientists had been instrumental in bringing about policy change at the national level in

[91] One such policy battle occurred in Texas and would have important implications for creationists in the years to come (see discussion below).
[92] "Teachers Willing to Test Scopes 'Monkey' Law," *The Dallas Morning News*, April 4, 1963.

the form of new textbooks, science educators were beginning to emerge as the primary agents of change in forcing the repeal of the nation's three remaining anti-evolution laws.[93]

On January 13, 1967, the first lawsuit was initiated in Tennessee by Martin Southern, a Knoxville lawyer. Southern sued state Attorney General George F. McCanless and the members of the Knoxville Board of Education on behalf of his son, Thomas, in an attempt to test the state's anti-evolution law (Wilhelm 1978, 219-220). Before that case went to trial, a second lawsuit was filed on May 16, 1967 by Gary Lindle Scott, the National Science Teachers Association, two of Scott's students, and 59 Tennessee college professors, in an attempt to have the state's anti-evolution law declared unconstitutional. Prior to initiating the suit, Scott had been fired by the Campbell County School District on grounds that he had been teaching evolution (pp. 220-223). But due to the negative national publicity that his firing received, the school district voted on May 9 to reinstate Cook to his job because "it did not want a replay of Tennessee's 1925 'Monkey Trial' and the expense it would incur" (p. 222). Despite getting his job back, Scott decided to proceed with the suit.

In the time between the two lawsuits being filed, state legislators initiated a parallel effort in the legislature to repeal the state's anti-evolution law. On March 1, 1967, two identical bills were introduced in the House and Senate.[94] On April 5, the House Judiciary Committee reported its version of the bill with a favorable recommendation, and seven days later, it was passed by the full House, by a vote of 59 to 30. The bill then went to the Senate, where it was defeated by the Education Committee on April 21, by a vote of 16-16 (Wilhelm 1978, 411-412). If not for the threat of two lawsuits hanging over the state, the matter might have ended there, but according to Larson (2003, 106-107):

> The Senate action focused added attention on Scott's pending lawsuit. A highly skilled and flamboyant defender of radical causes, William M. Kuntsler, signed on as Scott's attorney [before he got his job back]. The national ACLU and the National Science Teachers Association (NSTA), a department of the NEA affiliated with the American Association for the Advancement of Science, pledged their legal and financial help. Clearly overawed, the Campbell County School Board reinstated Scott with full back pay on May 11th…[Subsequently, t]he Tennessee State Senate capitulated without a word of debate.

Following the intervention of the ACLU and NSTA, the bill was signed into law on May 17, 1967. Subsequently, Scott's lawsuit was withdrawn, and Southern's suit was dismissed on lack of grounds (Wilhelm 1978, 222-223). More than 40 years after the famous Scopes "monkey" trial, Tennessee's ban on the teaching of evolution had finally been repealed.

[93] The involvement of science educators in this phase of the conflict is ironic, considering that NSF leaders worked hard to undermine their influence during the 1950s in the development of new scientific course materials.

[94] HB 48 was introduced by Reps. Smith, Galbraeth, and Bradley and referred to the House Judiciary Committee. SB 46 was introduced by Senators Elam and White and referred to the Senate Education Committee (Wilhelm 1978, 411-412).

This policy episode is instructive for three reasons. First, it reveals the importance of two categories of pro-evolution organizations during the 1960s: science educators and church-state separationists. While scientists played the decisive role in the NSF's decision to sponsor the development of new biology course materials, teachers and their allies were critical at the local and state levels in repealing the remaining state anti-evolution laws. Also, because of the financial and ideational resources provided by their organizational allies at the national level, the anti-evolution bill that had previously died in the Tennessee Senate's Education Committee was able to find a second chance at life.

Second, the episode highlights the importance of the courts as an alternative policy venue. Courts can facilitate policy change in a couple of ways. In some cases (as in Arkansas), judicial opinions can force policy change upon an unwilling legislature or executive branch. But the situation in Tennessee demonstrates that sometimes the threat of a lawsuit alone is sufficient to motivate policy makers in other venues to take action preemptively.

Finally, the victory by the pro-evolution alliance reveals the relative weakness of creationist organizations during this period. The fact that policy makers were wary of rehashing the national media circus of the Scopes trial speaks to the fact that creationists had yet to develop a new set of policy frames that could counter scientists' claims and withstand the scrutiny of the national media. Their weakness at this critical moment in the history of the policy conflict allowed scientists and their supporters to garner an important achievement on the path to total victory.

Meanwhile, in Arkansas, supporters of evolution turned to the courts after a proposed bill to repeal the 1928 anti-evolution law died in the legislature in 1965.[95] Both the legislative effort and the subsequent judicial challenge were spearheaded by Forrest Rozzell, executive secretary of the Arkansas Education Association (AEA), a 17,000 member organization affiliated with the National Education Association.[96] Joining the AEA in support of repeal were the Arkansas School Board Association, the Arkansas Parent Teacher Association, and the American Association of University of Women (AAUW) (Moore 1998, 652). Leading the opposition were several Baptist religious organizations, including the State Association of Missionary Baptist Churches, the Central Baptist Association, and the Arkansas Baptist Biblical Fellowship, as well as Arkansas Governor Orval Faubus (p. 652).

Working through the AEA, Rozzell enlisted Susan Epperson, a Little Rock biology teacher, to test the decades-old law in court on constitutional grounds. At the center of the controversy was a non-BSCS textbook, *Modern Biology*, which contained just enough language asserting that humans and apes descended from a common ancestor as to risk running afoul of the law. Teachers and school districts dealt with the offending sections in different ways: some teachers simply skipped the potentially illegal chapters, some districts chose to forego teaching biology altogether, and some actually taught the material on evolution. Until this time, however,

[95] The story of Arkansas's effort to overturn its 1920s-era prohibition against the teaching of evolution has been covered extensively by historians. The following discussion draws primarily from Wilhelm (1978, 214-219), Moore (1998), and Larson (2003, 98-120).
[96] "Evolution Stirs Up Baptists," *Dallas Morning News*, September 25, 1965.

no one had ever challenged the material in court and, as a result, teaching practices varied widely across the state (Moore 1998, 652-653).

The AEA financed and took charge of Epperson's legal challenge, including subsequent appeals all the way to the U.S. Supreme Court (Stinnett and Kennan 1969, 196). On December 6, 1965, shortly before she was scheduled to teach the course material on evolution, the AEA filed a brief on her behalf against the directors of the Little Rock School District and the district's superintendent, seeking a declaratory judgment against the anti-evolution law (Moore 1998, 653). In his detailed history of this episode, Moore (1998, 653-655) recounts the numerous individuals and organizations that lined up to support and oppose Epperson's actions. In addition to the organizations mentioned above, Epperson received support from a familiar name in the BSCS saga—Arnold Grobman—formerly director of the BSCS and then-president of the National Association of Biology Teachers (NABT). The involvement of national organizations like the NABT and AAUW ensured that Epperson and the AEA would have the resources needed to see the challenge all the way through the judicial process, but it also threatened to become a national spectacle, of the sort not seen since the Scopes trial.

The trial began on April 1, 1966 in Arkansas's Chancery Court and, despite fears of a prolonged media circus, the proceedings ended after only two hours (Moore 1998, 656). On May 27, Chancellor Murray Reed struck down the law as a violation of the U.S. Constitution's Fourteenth Amendment, arguing that the statute was vague and difficult to interpret (p. 656). Epperson's victory was short lived, as the state decided to appeal the decision to the Arkansas Supreme Court. On June 5, without publishing any written opinions, the state Supreme Court overturned the lower court's decision by a vote of 6 to 1. After being denied a rehearing, Epperson appealed the decision to the U.S. Supreme Court.

Again, several national organizations intervened on Epperson's behalf, filing two amicus curiae briefs, which, according to Larson (2003, 110), "proved decisive" to the final outcome. The ACLU and the American Jewish Congress (AJC) took the lead on the first brief, arguing that the Arkansas law was an unconstitutional establishment of religion. The sole purpose of the statute, they argued, was to use the powers of the state to force upon students the teaching of the biblical account of creation. Therefore, using the test established by the Supreme Court in *Abington School District v. Schempp* (374 U.S. 203), the law was unconstitutional because its sole purpose was primarily religious (Larson 2003, 110-111).

The second amicus curiae brief, which made the case for academic freedom, was filed by the National Science Teachers Association and National Education Association. What made their brief particularly powerful was the inclusion of a statement signed by 179 biologists throughout the nation affirming the widespread acceptance of the theory of evolution among scientists (p. 110). In this single case, we see how far the supporters of evolution had come since the 1920s. By combining forces in a strategic alliance, science educators were willing to put their own necks on the line by challenging the original bans on evolution; scientists affirmed the non-religious nature of the theory of evolution; and church-state separationists helped frame the debate as an unconstitutional intrusion of religion into the public sphere, rather than a debate about local control over public school curricula.

On the other side, the state of Arkansas failed to mount a strong defense of the anti-evolution law, in part because the previous attorney general—a staunch defender of the anti-evolution statute—was not re-elected. As Larson (2003, 112) argues, "The fire had gone out since Dayton. The state's attorney did not understand the once popular arguments for an anti-evolution statute, and clearly felt uncomfortable defending the restriction before the Supreme Court." On November 12, 1968, the U.S. Supreme Court unanimously declared Arkansas's anti-evolution law unconstitutional, arguing that the statute's purpose was primarily religious and that it violated the First Amendment's mandate that government be neutral with respect to religion (p. 112).

Writing for the Court, Justice Abe Fortas invoked the primary-purpose test that the Court had previously established in *Schempp*, arguing that "[t]he State's undoubted right to prescribe the curriculum for its public schools does not carry with it the right to prohibit, on pain of criminal penalty, the teaching of a scientific theory or doctrine where that prohibition is based upon reasons that violate the First Amendment." Applying the test to the Arkansas statute, Fortas wrote:

> In the present case, there can be no doubt that Arkansas has sought to prevent its teachers from discussing the theory of evolution because it is contrary to the belief of some that the Book of Genesis must be the exclusive source of doctrine as to the origin of man….Arkansas' law cannot be defended as an act of religious neutrality. Arkansas did not seek to excise from the curricula of its schools and universities all discussion of the origin of man. The law's effort was confined to an attempt to blot out a particular theory because of its supposed conflict with the Biblical account, literally read. Plainly, the law is contrary to the mandate of the First, and in violation of the Fourteenth, Amendments to the Constitution. (*Epperson v. Arkansas, 393 U.S. 97*)

In its sweeping ruling, the Supreme Court not only struck down one of the two remaining state bans on the teaching of evolution; it also blew a hole in creationists' arguments—going back to William Jennings Bryan—that omitting the teaching of evolution from public school curricula was a way for government to remain neutral on the issue. On the contrary, by actively banning evolution, policy makers had, in effect, taken sides not with "religion," generally, but with a particular segment of American religion, thereby violating the Constitution's religious neutrality mandate. The net effect of the Supreme Court's ruling was to place the Court and the federal government squarely on the side of scientists and their supporters, erecting an immense constitutional barrier that their opponents would have to overcome in order to challenge the new policy status quo.

Although *Epperson* was a key national milestone in the policy development story of the 1960s, there remained one more anti-evolution statute that the supporters of evolution would need to repeal in order to achieve all-out victory. One year later, they would get their day in court in Mississippi. In 1969, Mrs. Arthur G. Smith filed suit on behalf of herself and her daughter against the state of Mississippi and the state Board of Education, requesting an injunction to

enjoin the state from enforcing its 1926 anti-evolution law. Referencing the U.S. Supreme Court's decision in *Epperson*, and rejecting claims that Mississippi's anti-evolution statute was materially different from Arkansas's, the state Supreme Court declared Mississippi's anti-evolution law unconstitutional on December 21, 1970 (Larson 2003, 120-122; Wilhelm 1978, 223-226). With the final court decision in Mississippi, all of the legislative and legal wrangling of the 1920s had come undone, and creationists were deprived of one of their principal policy weapons against evolution: the ability to prohibit its teaching altogether.

By 1970, the national policy status quo concerning the teaching of evolution had been completely overturned. On the central question of the long-running policy conflict— "Should public schools take sides or remain neutral in the battle of ideas?"—the tide had turned decisively in favor of scientists, science educators, and the supporters of evolution. At the national level, the National Science Foundation picked a side with its establishment of the Course Content Improvement Program and its subsequent funding of the Biological Sciences Curriculum Study. Although the government could not legally promote the new BSCS textbooks, the ideas in the new course materials, including the foundational theory of evolution, clearly reflected the views of NSF concerning the subject matter that should be taught in public school classrooms.

At the local level, school districts adopted the BSCS textbooks and their imitators at a surprisingly rapid pace, with little resistance from creationists. By introducing the new textbooks, school districts throughout the country were clearly siding with scientists and their supporters in acknowledging that modern biology could not be taught without proper treatment of the theory of evolution. Finally, even in the three remaining holdout states that still had prohibitions against the teaching of evolution in their statutes, legislative and judicial decision makers sided with the pro-evolution alliance of science educators, scientists, and church-state separationists to repeal the last three anti-evolution laws in the nation.

The result of policy makers choosing to side with scientists and their allies was the following: (1) BSCS textbooks and their imitators from other publishing companies became widespread throughout the United States; (2) the teaching of evolution in publicly school classrooms was no longer legally banned anywhere in the nation; (3) the teaching of evolution was now constitutionally protected, while sectarian instruction about the origins of humankind was tagged as a violation of the First Amendment; and (4) perhaps most important to the long-term sustainability of the new policy status quo, scientists had become enmeshed in the policy process at all levels of government, achieving a high degree of status as a key national asset in the United States's Cold War stalemate with the Soviet Union. These policy changes—at all levels of government and in multiple policy venues—would have been unthinkable during the 1920s era of policy conflict. Even more astonishing was the degree to which the new policy status quo remained sustainable over time, given the backlash these changes produced during the succeeding decades. As noted in Chapter 2, even though conflict remains the norm in many states to this day, the teaching of evolution in public schools is now the universal policy in all fifty states.

Winners and Losers

Before attempting to explain how creationists were able to mount a comeback, despite these major policy changes, it is helpful to set the preceding discussion on more theoretical foundations. In Chapter 2, I argued that the policy process should be conceptualized as a set of interconnected organizational fields, comprising both political and non-political organizations attempting to effect policy change at one or more levels of government and in one of more policy venues. For any given policy conflict, the organizations waging the fight can be said to compose a policy field, and for relatively simple conflicts, the organizations will tend to cluster into two distinct camps, each united by an idea or set of ideas. In the case at hand, the policy conflict of the 1950s and 1960s boiled down to a simple question: "Should government remain neutral or take sides in the battle of ideas?" Given the status quo leading into the 1950s—which essentially sidestepped the question—the practical question facing policy makers was whether or not public school science curricula should include discussion of evolutionary theory. Scientists and science educators advocated for including evolution in textbooks, while creationists opposed its inclusion outright (either through legal prohibitions or through the adoption of alternative textbooks).

By the end of the 1960s, scientists and their allies had succeeded in forcing government policy makers off the sidelines in the battle of ideas. At all levels of government and in all policy venues where the issue was contested, scientists and their allies scored major victories for the teaching of evolution, simultaneously achieving their policy objectives, while ensuring that future legal prohibitions against the teaching of evolution would be taken off the table as a policy solution for creationists to pursue. In short, the net effect of the policy changes described above was to create a clear set of winners and losers in the long-running policy conflict over whether or not evolution should be taught in taxpayer-supported schools.

On the winning side were the members of the pro-evolution alliance, which included national and state organizations representing three constituencies: scientists, science educators, and church-state separationists (see Table 3). Scientists and science educators had the most to gain from the policy changes because their main interest was ensuring the adequate teaching of evolution in high schools. Church-state separationists, on the other hand, were more motivated by the opportunity to set a constitutional precedent that would make it difficult for religious interests to hold sway over education policy. It is also important to note that of the three types of interests represented in the alliance, those most concerned with seeing evolution taught in the schools were primarily non-political organizations.

Table 3. Pro-evolution organizations involved in the 1950s- and 1960s-era policy conflict.

Constituency	Organization	
	Political	**Non-Political**
Scientists	National Science Foundation	American Association for the Advancement of Science
		American Association of University Women
		American Institute of Biological Sciences
		Biological Sciences Curriculum Study
		National Research Council
Science Educators		Arkansas Education Association
		National Association of Biology Teachers
		National Education Association
		National Science Teachers Association
Church-State Separationists	American Civil Liberties Union	
	American Jewish Congress	

Among both scientists and science educators, professional associations were the most involved group of organizations in the fight (organizations for which the political fight was a distraction from their primary missions of sharing and publishing disciplinary research, developing professional norms and standards, and providing a venue for professional networking). Although the alliance did include a strong set of political organizations—the church-state separationists—their interest in evolution was based primarily on constitutional objectives. Consequently, most of the organizations that helped bring about such dramatic policy changes returned to their regular business, neglecting the looming creationist threat and largely withdrawing from the policy-making process. In short, no organization in a position of political influence was left "in charge" of consolidating the policy gains of the 1960s. As I argue in the next chapter, this oversight would help creationists as they worked to reorganize and remobilize their supporters during the 1970s.

On the losing side was a loosely organized network of individual policy activists, religious organizations, and a key organization from the ideational field. Although the actors in the ideational field did play a small role in the policy conflict of the 1960s, they were not yet in a position to mobilize a nationwide cadre of supporters on the scale of the 1920s creationism movement. Instead, the principal creationist organization of the ideational field, the Creation Research Society (see Chapter 5), played a catalytic role, encouraging local political activists to engage their elected officials directly, and providing "scientific" experts to testify on their behalf. Additionally, the involvement of several Baptist religious organizations in Arkansas, as well as the governor himself, added strength to the anti-evolution cause in that state, but in the end, their advocacy was powerless in the face of the Supreme Court and the strong constitutional arguments made by their well-organized opposition. The lack of organizational strength among creationists was certainly a contributing factor to the major policy losses they suffered during this period, but even as they were losing key policy contests, creationists in the ideational field were also laying the foundation for a resurgence during the 1970s. In the next chapter, I discuss

the organizational factors that facilitated their comeback in greater detail. In short, without the ideas and financial resources that were contributed by the Creation Research Society and its offshoots, it is doubtful that creationists would have found the means to carry on in the face of near-total defeat.

Finally, the pro-evolution policy outcomes detailed in this chapter help define the central puzzle of this study. In order for new policy changes to be sustainable over the long-run, theory predicts that winning organizations should take steps to consolidate their victories (for example, by expanding the scope of evolutionary teaching to more schools and by establishing stronger ties to the relevant policy-making institutions), and losing organizations should either fade away or fail to reorganize with sufficient strength to mount a credible challenge to the new status quo. As we know, however, creationists did not go away, and the pro-evolution alliance went missing in action for much of the 1970s, allowing creationist organizations to gather their forces for an all-out assault on the new policy status quo. Yet, despite the strong challenge mounted by creationists and the weak response by scientists, the policy changes of the 1960s grew *stronger* over time, reaching an increasing number of schools throughout the nation. The solution to this puzzle of contested policy change requires a more thorough understanding of the ideational field and its relationship to the winners and losers that emerged from the policy upheaval of the 1960s. I turn to this topic in the next chapter, detailing the rise of "creation science" as an alternative policy frame that creationist organizations and their allies would use to reorganize and remobilize their supporters.

CHAPTER 5: CONTESTED POLICY CHANGE

> During the three-plus decades between the Scopes trial and the Darwin Centennial, the Lord raised up a number of scientists who would lay the foundations for a truly significant creationist revival in the 1960s and 1970s. The academic establishment was little aware of them, and even the fundamentalists and evangelicals took little note of them, but they were nevertheless plowing the ground and sowing good seed.
>
> —Henry M. Morris (1993 [1984], 85),
> Founder, Institute for Creation Research

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This chapter sets forth the primary theoretical puzzle of this study: Why have the supporters of evolution been unable to end the policy conflict over the teaching of evolution, despite major victories in multiple policy venues? Significant policy change should give the winners of a policy victory the motivation and resources they need to consolidate their gains and put their opponents out of business. But rather than simply fade away, creationists reinvented themselves during the 1970s. How did they emerge from their defeats stronger than before, and why—despite their newfound organizational strength—were they unable to unravel the policy changes set in motion by their opponents?

I pick up the narrative below by describing how creationists were able to reinvent themselves in the policy field using the organizational resources from the separate field of ideas. Field bridging is the key mechanism, but organizational motivations also helped keep this group of actors alive in the aftermath of defeat. Unlike typical political organizations, creationists were able to draw support from their underlying religious base, a key organizational asset that is often overlooked in theories of policy development and political conflict. Additionally, they were able to develop new alliances with the organizations of the Christian Right and with key actors in the Republican Party. Together, all of these factors combined to make creationists a formidable force in the policy contest.

I then turn my attention back to scientists, explaining why they virtually disappeared from the policy scene after their 1968 Supreme Court victory, and demonstrating how they were able to remobilize to counter the re-imagined and organizationally emboldened creationism movement of the 1970s. Because of the work of a single organization and its leaders, scientists organized themselves at the grassroots level to contest new policy skirmishes at the state and local levels of government. Drawing on the increasingly sophisticated work of scientists in the ideational field, scientists in the policy field successfully countered new ideas put forward by their opponents (who, by this time, were going under the banner of "creation science"). Again, the spillover from the ideational field served as a catalyst of conflict, while providing scientists with the ammunition they needed to achieve victory in most of the venues where they were forced to contest the teaching of creation science in public schools. But, as before, it was the alliance they formed with church-state separationist organizations that yielded the most significant policy victories in the judicial arena. By 1987, scientists were again victorious, further

consolidating the policy gains of the 1960s and once again stripping creationists of their most significant weapon in the policy conflict. Figure 5 illustrates the key events that occurred during the timeframe of this chapter.

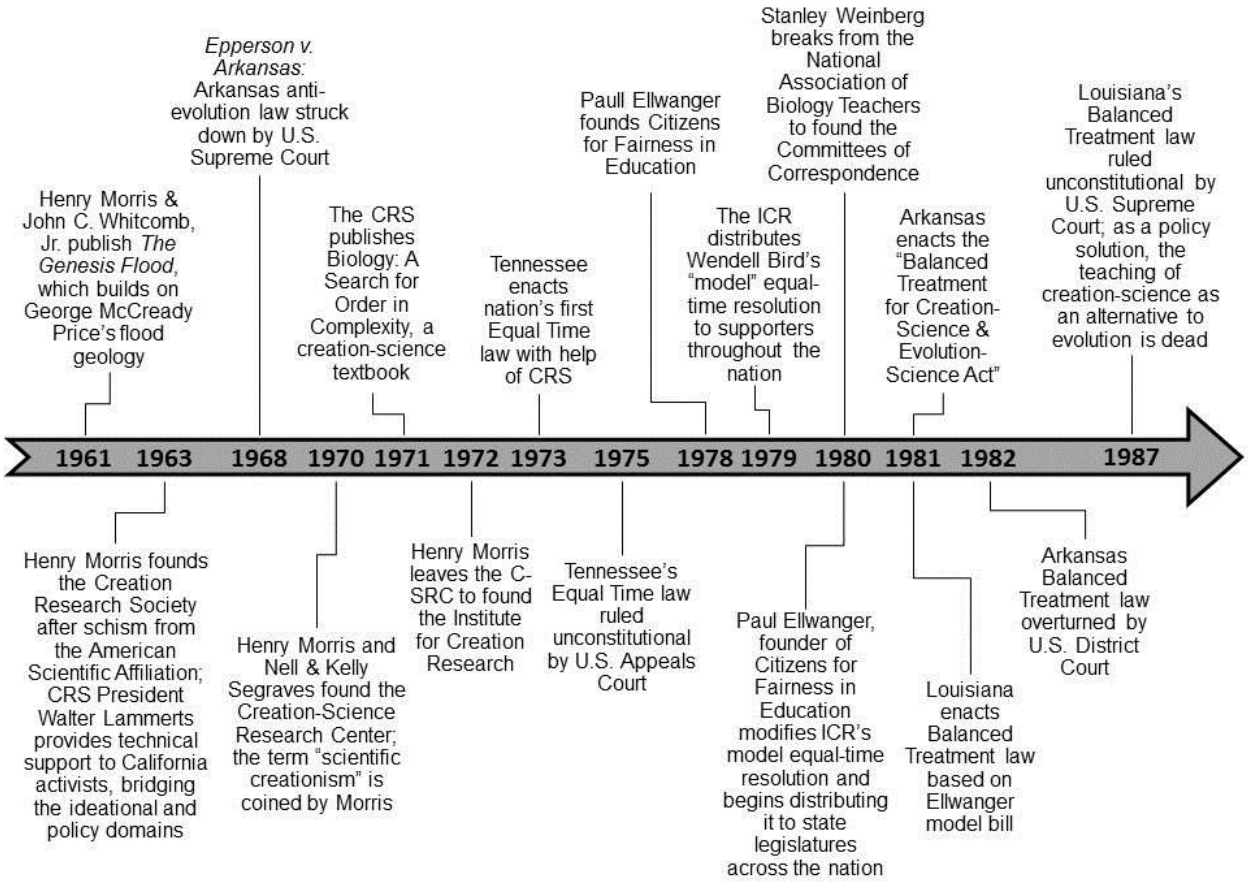

Figure 5. Timeline of key events, 1961-1987.

As we'll see below, organizations played an essential role on both sides of the controversy. In an effort to keep track of the many different organizations that played a role in the creation-science conflict, Figure 6 situates each organization in relation to the ideational and policy fields, as well as the fields of religion and science. In the interest of readability, organization names have been abbreviated on the diagram, but a list of abbreviations can be found on page v.

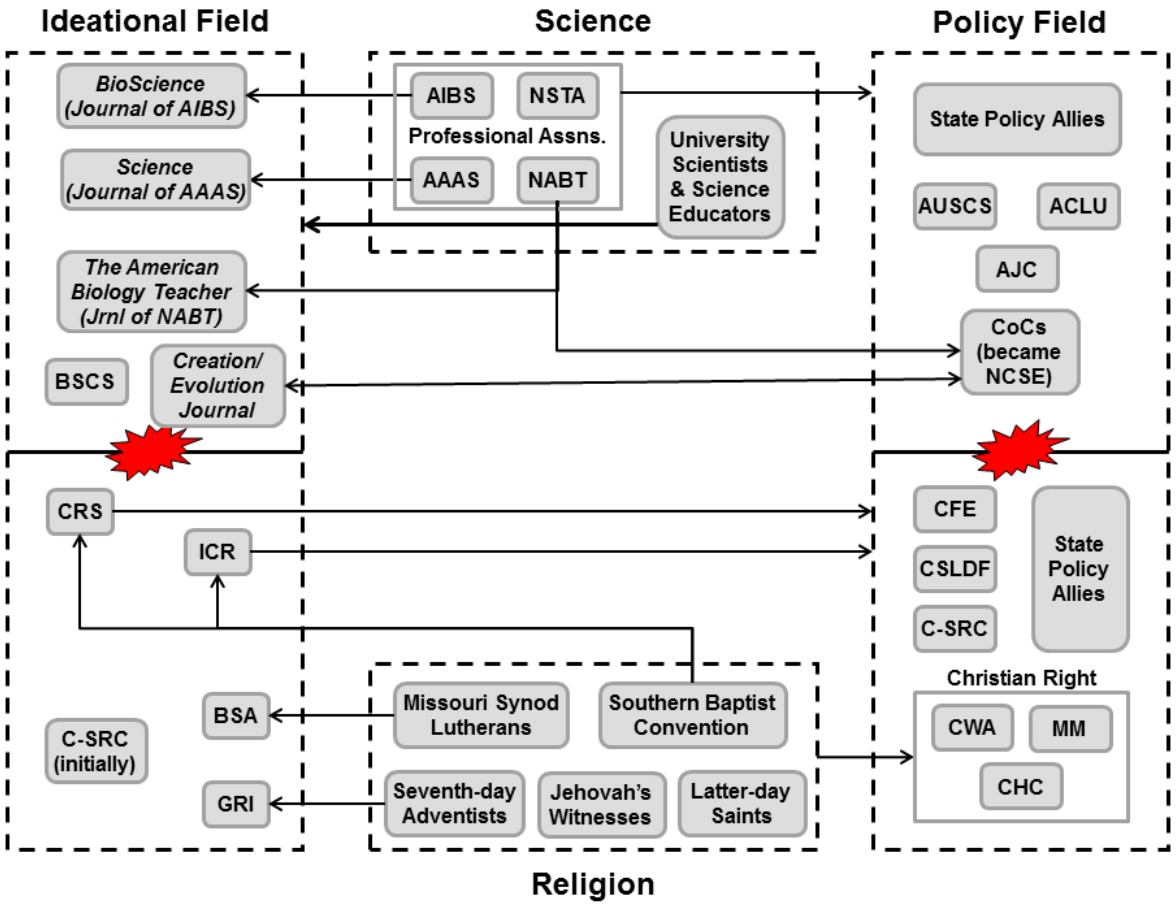

Figure 6. Key organizations in the ideational and policy fields, 1963-1987.

CREATIONISTS STRIKE BACK

As argued in the previous chapter, creationists emerged from the 1960s as the losers in the long-running policy conflict over the teaching of evolution. But rather than simply fade away in the years that followed, they were able to rebuild their movement under the banner of "creation science," with their policy allies calling for "equal time" and "balanced treatment" in the classrooms. How did they do it? As shown in the previous chapter, the creationist political movement begun in the 1920s was virtually nowhere to be found during the 1960s, which helped scientists gain a foothold for evolutionary theory in the public schools. Additionally, the Supreme Court's intervention on the side of scientists erected new political barriers that creationists would have to overcome if they wanted to chip away at the new policy status quo. From where did the new creationism movement emerge, and how did it build such widespread support in a relatively short period of time?

In short, the policy losers of the 1960s broadened the scope of conflict, refocusing the dispute on a new policy question: "Should public schools be permitted (or required) to teach

alternative theories of human origins?"[97] As I describe below, creationists expanded the scope of conflict by bringing in new policy allies, cultivating public opinion, and convincing policy makers throughout the country to pay attention to their cause. We could tell their story through multiple theoretical lenses, each focusing on a different aspect of the policy process. But while these alternative theories may help explain the creationism movement's explosive growth during the 1970s, and even its engagement in certain state- and local-level policy disputes, they leave two questions unanswered. First, why did creationists choose to fight again, despite such overwhelming odds against them; and, second, what factors might lead to a decisive resolution of the conflict in the future?

I argue that creationists were able to withstand extinction as a movement due to the intervention of a separate organizational field that had been incubating the next generation of creationist ideas, leaders, and organizations for nearly 40 years. Simply surviving extinction, however, was not enough to remobilize creationists on a national scale. It would take the transformation of the ideas generated in the ideational field into political frames that could not only mobilize a mass base, but also garner the attention of policy makers throughout the country. Additionally, their success would hinge upon the successful transfer of resources (both material and ideational) from the ideational field to the policy field, combined with the adoption of new policy strategies that could be used in state and local policy venues throughout the country.

Using the theory developed in Chapter 2, I argue that there were three mechanisms by which creationist leaders were able to bridge the divide between the two distinct organizational fields in which they were embedded. First, creationists were able to draw new *ideas* from the ideational field and, more importantly, they succeeded in transforming these *religious* ideas into *quasi-scientific*, *political* ideas that could be employed in the policy field. Second, creationists were able to draw resources from the *organizations* of the ideational field, which provided them with the institutional infrastructure necessary to rebuild their movement. Finally, creationists recruited new *leaders*, *supporters*, and *allies* from the ideational field. By recruiting external support for their cause, they were able to reinforce the supply of ideas and material resources necessary to contest the policy conflict, while laying the groundwork for the mobilization of broader public support.

Ideas

Ideas played two roles in the resurgence of the 1970s creationism movement. First, ideas drawn from particular religious interpretations of Genesis provided the intellectual foundation for creationist theories of geological and biological development. Second, creationists effectively reframed these religious ideas in scientific terms that could be understood and manipulated by policy makers and the public alike. In each instance, ideas were drawn or carried over to the policy field from individuals and organizations in the ideational field, serving as a resource to creationist political activists in the wake of *Epperson*.

[97] Note the subtle distinction from the policy question of the previous era. Because of the Supreme Court's intervention, policy makers could no longer prohibit the teaching of evolution, but there was nothing in the *Epperson* ruling that forbade states or school districts from permitting or mandating the teaching of alternative, scientific theories of human origins.

The most important set of ideas to emerge from the ideational field was the concept of "creation science" or "scientific creationism," which became an effective frame for political activists to rally around. But creation science was more than just a convenient policy frame. The concept embodied the endpoint of decades of debate between religious actors in the ideational field concerning the age of the earth, the Noachian flood, and the proper interpretation of Genesis—three religious issues having ostensibly little to do with human evolution. At the heart of the debate were three alternative interpretations of the Bible's opening chapter of Genesis: The *day-age theory* (supported by William Jennings Bryan during the 1920s) asserted that the "days" of Genesis described entire geological ages and, thus, that the earth was indeed millions of years old. The *gap theory* accounted for the millennia-long geological ages by arguing that there was an implied gap between the shapeless creation of Genesis 1:1 and the subsequent period of Edenic creation.[98] Finally, the *flood theory* (supported by George McCready Price, who we met in Chapter 3, and Henry Morris, an iconic scientist in the ideational field) argued that the Earth was only about 6,000 years old and that the fossil evidence could be explained by Noah's great flood (Numbers 1998, 113).

By the mid-1970s, flood theory would become the standard bearer for creation science, due in large part to the writings of Henry Morris, who helped bring scientific creationism to a mass audience during the 1970s and 1980s. By embracing flood theory, Price and Morris argued that the earth simply wasn't old enough to support the theory of human evolutionary development from lower life forms, and because of the great flood, the fossil record couldn't be trusted as evidence of human evolution.

Intellectual Foundation

Although it is tempting to argue that the leadership of Price and Morris was the most important variable in the development of creation science, I argue that we need to look deeper into the structure of society—and further back in the past—to truly explain the resurgence of creationism. These men were not lone actors but, rather, socially-constructed agents of the organizational networks in which they were embedded. In particular, each man brought to the debate a distinctive way of looking at the world, shaped by a specific religious tradition. These men believed what they believed and acted upon those beliefs because of the powerful influence of religion. Would creation science have emerged in the absence of Price or Morris? We can never know the answer to that question, but I argue that the conservative religious networks crisscrossing society created the conditions necessary to facilitate the emergence of a Price or a Morris. Had neither man been born, those conditions would have remained present, increasing the probability that someone else would have emerged to carry on the creationist cause. This is an important point, with implications for the future of creationism: Until the underlying religious structure of creationism is changed, the conditions will always be present for new leaders to emerge, even in the face of seemingly insurmountable obstacles.

[98] The first verse of Genesis 1 states, "In the beginning, God created the Heavens and the Earth." The second verse then proceeds, "Now the earth was formless and empty, darkness was over the surface of the deep, and the Spirit of God was hovering over the waters" (New International Version 2011). The "gap" in gap theory is unwritten and falls between these two verses.

What does that religious structure look like? As discussed in Chapter 2, organizations have many mechanisms at their disposal to exert control over their members, but perhaps the most effective form of control for religious organizations is the ability to shape their members' fundamental belief structures. By laying authoritative claim to knowledge about the spiritual *and material* world, Protestant religious organizations don't give their members much of a choice: they can either accept their leaders' interpretation of scripture or find someplace else to worship.[99] In the case at hand, we saw in Chapter 3 how religious disagreements over the proper interpretation of the Bible led to the great Protestant schism between modernists and traditionalists during the early 1900s. On one side, modernists argued that the Bible was not the final word concerning knowledge about the material world, but it was the authoritative source of knowledge about the spiritual world. On the other side, traditionalists embraced the Bible as the source of all knowledge—both material and spiritual—sometimes adopting new interpretations to reconcile seemingly contradictory biblical text with observations of the natural world.

By the 1970s, the schism had produced many different theological strands, but on the question of evolution, the cleavage remained binary: mainline and liberal religious organizations on one side and conservative religious organizations on the other. In the case of the former, many liberal and mainline religious organizations had managed to reconcile evolutionary theory with their theological beliefs, or they sidestepped the question altogether (Numbers 2006, 330). Indeed, the most revealing evidence of how much the times had changed comes from the Presbyterian Church in the USA (the spiritual home of William Jennings Bryan), which only a half century earlier had been divided on the issue of evolution. In a 1969 statement, the church's General Assembly tabled the question of evolutionary theory's veracity, arguing that:

> [t]he real and only issue is whether there exists clear incompatibility between evolution and the Biblical doctrine of Creation. Unless it is clearly necessary to uphold a basic Biblical doctrine, the Church is not called upon and should carefully refrain from either affirming or denying the theory of evolution. We conclude that the true relation between the evolutionary theory and the Bible is that of non-contradiction and that the position stated by the General Assemblies of 1886, 1888, 1889 and 1924 was in error and no longer represents the mind of our Church."[100]

Despite this shift in mainline religious attitudes toward evolution, conservative religious organizations remained firmly opposed to evolutionary theory. Had mainline and liberal churches managed to maintain or grow their membership base, the 1950s and 1960s might have witnessed the beginning of a long term secular decline in American opposition to evolutionary theory. Instead, conservative religious organizations began to grow at a faster rate than their

[99] Alternatively, one can remain a member of church, suffering the cognitive dissonance associated with holding different beliefs from one's leaders. In a monolithic religious organization like the Catholic Church, some individuals who wish to remain members of the church may have no option but to endure the cognitive dissonance. In the Protestant tradition, however, individuals are free to pick and choose those denominations that are most consistent with their beliefs. Consequently, for most Protestants confronted with contradictory beliefs by their religious leaders, the choice is binary: stay or go.

[100] Presybterian Church in the U.S.A., 1969, General Assembly, http://gamc.pcusa.org/ministries/theologyandworship/evolution/, accessed 12/5/2010.

mainline counterparts by the middle of the 20th century. According to Larson (2006 [2004], 251-252):

> Among large Protestant denominations, the conservative Southern Baptist Convention and Lutheran Church-Missouri Synod outpaced all others in both percentage and absolute terms. Among small denominations, membership in fundamentalist and Pentecostal groups soared. The Mormons, Assemblies of God, and Seventh-day Adventists topped the chart in growth rates, with all three friendly to creationism.

Hewing to a more literal interpretation of the Bible, these conservative religious organizations would supply the ideas, the leaders, and a large cadre of supporters to the modern creationism movement. Thus, when talking about the religious underpinnings of creationism, the emergence of creation science was not a product of "religion," writ large. Instead, creation science grew out of the religious ideas of a relatively small, but quickly growing, collection of *conservative, Protestant* religious organizations, which, in turn, emerged from the great Protestant schism half a century earlier.

One of the most significant of these conservative religious organizations was the Seventh-day Adventist Church, the spiritual home of George McCready Price. The Seventh-day Adventist Church is a distinctly American religious organization, formed as an offshoot of the Millerite apocalyptic movement during the mid-1800s. Under the leadership of Ellen White, who claimed to receive messages directly from God, Adventists formed their theology around the Bible's injunction in Exodus to work six days and worship on Saturdays as a Sabbath to God (Numbers 2006, 90).[101] But unlike other religious organizations, which embraced interpretations of the Bible that permitted each day of Creation to span entire geological ages or that hypothesized a gap in the biblical account of Creation, Adventists held firm to the belief that the world and all life therein was created in literally six days. This belief was further reinforced by White herself, who claimed that God had shown her a vision of the Creation and that it was indeed carried out in just six days (Numbers 2006, 89-90).

Coupled with the belief in a literal six-day Creation was the Adventist belief—again, propagated by White—that the geological and fossil records could be explained by the great flood of Noah, a purportedly worldwide event that wiped out nearly all life on the planet and remade the surface of the Earth. According to Numbers (2006, 90), "White's authoritative descriptions of times past made most Adventists, including Price, unwilling to entertain interpretations of Genesis, such as the day-age and gap theories, that allowed other fundamentalists to accommodate the findings of historical geology." In an attempt to reconcile his Adventist beliefs with modern science, Price argued that scientists were mistaken in their

[101] The relevant passage reads: "Remember the Sabbath day by keeping it holy. Six days you shall labor and do all your work, but the seventh day is a Sabbath to the Lord your God. On it you shall not do any work, neither you, nor your son or daughter, nor your male or female servant, nor your animals, nor any foreigner residing in your towns. For in six days the Lord made the heavens and the earth, the sea, and all that is in them, but he rested on the seventh day. Therefore the Lord blessed the Sabbath day and made it holy" (Exodus 20:8-11; New International Version, 2011).

assertion that the fossil record could be dated sequentially based on geological stratification. In other words, because he could identify places where the fossil record was observably "upside down," with older fossils resting atop layers of younger fossils, then it followed that scientists' theoretical arguments about the age of the earth and the development of species could not be trusted. In his view, this "fact" clearly contradicted the "theory" that geologists had concocted to explain the development of the Earth (pp. 96-97). Having satisfied himself that the prevailing geological theories of the early 1900s were fundamentally flawed, Price felt reassured that the Noachian flood was indeed the best explanation for the observed geological evidence, and he would make a living for himself throughout his lifetime by trying to convince scientists and the rest of the world of the veracity of "flood geology" (Clark 1966).

For many years, Price was one voice amid a cacophony of competing theological explanations concerning the origins of the earth and humankind. That would change around mid-century with the emergence of Henry Morris, a key figure who acted as a bridge between the ideational and policy fields. Writing in his *History of Modern Creationism*, Morris observes that although there were many scientists opposed to evolution during the early decade of the 20th century, most of these early creationists subscribed to either the day-age or gap interpretations of Genesis. Only the Seventh-day Adventists and Lutherans held firm to a belief in a six-day Creation, and only Price was able to mount a strong geological defense of creationism from within this worldview (Morris 1993 [1984], 67).

Price's flood geology greatly influenced the beliefs of Morris—an engineer, devout Baptist, and active member of the Gideons—who decided to write his first book on the scientific evidence for Creation and the great flood. Like Price, whose motivations were primarily religious, Morris did not set out to found a political movement, but merely "to win students to Christ" (Morris 1993 [1984], 103). As a new instructor at Rice University during the early 1940s, Morris sought to develop a balanced, scientific account of creation and evolution, building upon the work of not only Price, but also Harry Rimmer, a Presbyterian pastor who wrote and lectured extensively against evolution during the 1930s and 1940s (pp. 98-99). Although Morris, admired Rimmer's steadfast opposition to evolution and his belief in a six-literal-day creation, he believed that Rimmer erred by accepting the gap theory, with its old-age interpretation of the Bible (p. 102). Armed with the ideas of his intellectual forebears, Morris "resolved to embark on a verse-by-verse search through all the Bible, listing and categorizing every passage that bore on creation, the flood, nature, and other relevant topics," having come around to the view that "[t]he standards of evidence supporting evolution seemed ridiculously trivial compared to the evidence on which engineers have to base their systems, and also compared to the tremendous evidences for the divine origin of the Bible" (pp. 106-107). Following his exhaustive study of the Bible, Morris came to the conclusion that the debate over evolution could indeed be settled by Scripture:

> The Bible could hardly be more explicit on this point. Everything was created and made in the six natural days of the creation week, several thousand years ago. There may be some uncertainty in the precise date,…but there is no legitimate way the Bible can be made to yield anywhere near an age of a million years ago, say, for the date of creation. Neither the gap theory, nor the day/age theory, nor

> the allegorical theory, nor the revelation-day theory, nor any other theory that tries to accommodate the evolutionary ages of geology will satisfy the straightforward teaching of the Bible on this vital subject. Neither, for that matter, will any of them accommodate the scientific data. (p. 107)

Thus, whereas Price based his beliefs about Creation on the divine visions of the founder of his religious denomination, Morris rooted his own interpretations in the text of the Bible itself. As we will see, by building a foundation for scientific creationism on the Bible, rather than the peculiarities of a specific denomination, Morris's approach would ultimately appeal to a broader cross-section of religious Americans: those who accepted the Bible—as written—as the primary source of religious authority in their lives.

Morris did not come upon this revelation until after his first book, *That You Might Believe*, was already in the process of being published in 1946. According to his own description of the book, *That You Might Believe* left the door open to a gap theory interpretation of the Bible, a mistake that he regretted throughout his life. In all future writings, however, Morris would adhere firmly to a young-earth interpretation of the Bible, evangelizing in support of flood geology and all that the theory entailed for evolution (Morris 1993 [1984], 108).

In 1953, at a meeting of the American Scientific Affiliation, Morris met John C. Whitcomb, Jr., a professor of theology and Old Testament at Grace Theological Seminary. The pair struck up a friendship over the ensuing years, and in 1957, the two decided to collaborate on a new book that would take Price's theory of flood geology to the next level (Morris 1993 [1984], 164-165, 168-169). In 1961, Morris and Whitcomb published *The Genesis Flood*. The culmination of years of tinkering with Price's flood geology, *The Genesis Flood* would become the bedrock text of modern creationism. In Morris's own words, this was "a book which the Lord would graciously use to catalyze a significant revival of creationism—this time largely among scientists rather than theologians" (p. 163).

The Genesis Flood set forth a scientific rationale for the compatibility of Genesis with the study of geology, and unlike related works of the past, Morris and Whitcomb argued not only that the theory of evolution was irreconcilable with the Bible, but also that the theory suffered from fatal scientific flaws. The work became a huge success among conservative creationists, but it was rejected by most theologians and scientists (Lienesch 2007, 206; Scott 1997, 268). According to Numbers, one of the defining features of the book, which would appeal to a distinct group of religious adherents, was that "[b]oth authors shared an unyielding commitment to the authority, inerrancy, and infallibility of the biblical record" (Numbers 2006, 225). In other words, *The Genesis Flood* took as its starting point a belief in the fundamental correctness of the Bible and attempted to build a scientific theory upon the Bible's authority.[102]

The Genesis Flood profoundly affected the professional fortunes of Morris and Whitcomb. According to Numbers, the book sold over 200,000 copies in its first 25 years and

[102] The details of the arguments made in *The Genesis Flood* are outside the scope of this study. See Numbers (2006, 225-234) for a more complete analysis. See also Morris (1993 [1984], 163-193) for a first-person account of the book's development and the reactions it provoked after it was published.

"turned [the two authors] into highly sought-after celebrities, famous among fundamentalists as the Davids who slew the Goliath of evolution" (Numbers 2006, 234). Although Morris and Whitcomb did become widely known for their particular take on creationism, their fame did not extend beyond conservative religious individuals and organizations, and their views remained on the fringe of both scientific and religious circles for many years (p. 235). Indeed, *The Genesis Flood* might have remained but a footnote in history if not for the next critical step in Morris's career: the establishment of an organization to promote flood geology to a wider audience, while providing a more effective (albeit small) institutional counterweight to the extensive network of research universities that biologists and geologists call home.

As discussed in Chapter 3, the American Scientific Affiliation (ASA) had been the primary national forum for dialogue about the intersection between religion and science during the 1940s and 1950s. By the end of the 1950s, however, the ASA had begun to move from a position favorable to creationism toward the embrace of theistic evolution (Numbers 2006, 195). In Morris's own words:

> The complete capitulation of the ASA to evolutionism was signalled [sic] by the publication of a symposium volume on evolution in 1959, in honor of the one hundredth anniversary of Darwin's *Origin of Species*….Thus, when even the one organization that professed to be the scientific voice of evangelicalism went along with the evolutionary propaganda, the evolutionists could indeed claim—as they did repeatedly—that evolution had completely triumphed, even among the fundamentalists. (Morris 1993 [1984], 159-160)

In an attempt to persuade the ASA's leaders and members of the error of their ways, Morris wrote *The Genesis Flood* as a way "to call Christians back from the dangerous path into which they were being led by the American Scientific Affiliation and the neo-evangelical theologians" (Morris 1993 [1984], 190).

Although Morris would be unsuccessful in changing the ASA from within, his anti-evolution and pro-flood geology writings resonated with conservative members both within and outside the ASA, who had begun to grow alarmed by the organization's newfound positions toward evolution. In 1963, the ASA splintered, and the breakaway group formed the Creation Research Society (CRS), "with the explicit purpose of realigning science with creationism and publishing creationist textbooks for high schools and colleges" (Fowler 1982, 530). Although the CRS would eventually become involved in the policy battles of the next few decades, it should be stressed that the organization began its existence firmly rooted in the ideational field. According to Numbers (2006, 259), "From the beginning the CRS stressed education and research rather than evangelistic and political activities. Instead of sponsoring public meetings, it concentrated its energies on publishing texts and journals." The strategy worked: by 1973, the organization's membership count grew to nearly 2,000 individuals (p. 259).

According to Morris, the breakaway group that founded the CRS was known as the "Team of Ten" and included: Walter Lammerts, William Tinkle, Frank Marsh, John Grebe, John

Klotz, Wilbert Rusch, Duane Gish, R. Laird Harris, Edwin Monsma, and Morris himself. Of the ten individuals, all had some formal education in the physical or life sciences, and eight had earned their doctorates in a scientific field from reputable universities (Morris 1993 [1984], 203-205).[103] The founders of the CRS occupied a unique space, bridging the divide between science and religion. Although all belonged to conservative religious denominations (four alone from the Missouri Synod Lutheran denomination), each man was also deeply engaged in the scientific establishment of the time and could speak the languages of both science and religion with ease (though, notably, none of the members the Team of Ten was a geologist) (p. 206). Upon formal organization, Lammerts was chosen as president, and membership was restricted only to scientists with advanced degrees (M.S. or higher). Additionally, all members were required to sign a statement of faith (p. 208).[104]

The founding of the Creation Research Society was a momentous event. On one hand, the organization represented the first real organized effort by biblical literalists to recast the religious debate over evolution in their own terms. Building upon a foundation of biblical authority, a six-literal-day creation, and the "scientific" theory of flood geology, the CRS became the clearinghouse for a new vision of creationism that could, it was hoped, hold its own against the mainstream scientific establishment and their theory of evolution. On the other hand, although the CRS represented the resurgence of a markedly *religious* voice in the evolution debate, it should not go unnoticed that the CRS's focus on building a *scientific* alternative to evolution was in itself a recognition of just how much the political and cultural ground had shifted since the early 1900s.

Sputnik and the scientific developments leading up to that moment had truly elevated the status of science and scientists in society. Unlike the previous era, when scientists were forced to contest the battle over evolution in ideational terms friendly to religion, the tables had been turned, and now religious individuals were forced to recast their ideas in terms friendly to science. Of course, people like Morris and Lammerts could have simply continued contesting the battle of ideas in religious terms—for a religious audience only—but the genius of their approach was that they were willing and able to seize upon the newly exalted status of science to reframe their ideas in more scientific terms that could gain acceptance by a larger audience. Working through the CRS and other organizations soon to be created, Morris and his supporters played a significant part in perpetuating the battle of ideas by spreading the word about creationism to a vast religious audience and helping to shape public opinion in terms favorable to their cause (Numbers 2006, 312). That said, the activities of these organizations were not sufficient to

[103] Morris earned his Ph.D. in hydraulic engineering from the University of Minnesota in 1950 (Numbers 2006, 221). Lammerts had a Ph.D. in genetics from the University of California at Berkeley, Tinkle had a Ph.D. in zoology from the Ohio State University, Klotz had a Ph.D. in biology from the University of Pittsburgh, Gish had a Ph.D. in biochemistry from the University of California at Berkeley, Marsh had a Ph.D. in botany from the University of Nebraska, Monsma had a Ph.D. in biology, and Grebe had a D.Sc. from Case Institute of Technology. Harris had his Ph.D. in Old Testament studies but had studied chemistry as an undergraduate. Rusch, the only member without a doctorate, had an M.S. in biology from the University of Michigan (Morris 1993 [1984], 203-205).

[104] According to Morris (1993 [1984], 213), the statement of faith had four sections: "(1) the inerrancy of Scripture and the simple historicity of the Genesis record of creation; (2) special creation of the various 'kinds' of organisms in the Genesis creation week, with subsequent variation only within the kinds; (3) the global extent and effects of the Genesis Flood; (4) the historicity of the Fall of Adam and Eve, the need of the Savior, and salvation only through accepting Christ as Lord and Savior."

guarantee the perpetuation of the policy conflict in the wake of *Epperson*. Also needed was an effective bridge between the idea-generating creationists in the ideational field and the creationist activists of the policy field who were attempting to rebuild their movement in the face of all-out defeat.

A New Frame

Through a process of bricolage, or the recombination of preexisting, *legitimate* ideas, creationists working within organizations in the ideational field were able to put forward an alternative theory about the origins of humankind, which could gain acceptance by policy makers and the public alike.[105] Combining the religious aspects of creationism (specifically, Price and Morris's flood-theory interpretation of Genesis) with a scientific approach to the study of human and geological origins, the concept of "creation science" (also called "scientific creationism") was born.

The term "creation science" appears to have been coined in 1969 by Nell Segraves and Jean Sumrall when they established Creation Science, Inc. That organization was founded with the purpose of publishing creationist textbooks, which—they hoped—might be adopted by school districts under California's recently-enacted *Science Framework*. In 1970, Creation Science, Inc. was folded into the newly-created Creation-Science Research Center (see below). Later that year, Henry Morris introduced the synonymous term "scientific creationism" in a course he taught at Christian Heritage College; and in a 1971 article for *Creation Research Society Quarterly*, he detailed the significance of the concept for the creationism movement. In short, both creation science and scientific creationism represented a self-conscious attempt by creationists to deemphasize the religious aspects of creationism, in an effort to package creationism as an alternative *scientific* theory to the theory of evolution. In that regard, Morris considered evolution and creation science both equally scientific and equally religious, with both representing "competing scientific hypotheses" (Numbers 2006, 271-272).

The adoption of the creation-science frame by creationists was important for two reasons. First, it solved a practical problem for political activists (the losers of the 1960s policy conflict). Recall that Arkansas's ban on the teaching of evolution was struck down, in part, because the Supreme Court deemed the purpose of the state's statute to be primarily religious. Thus, in order to avoid any hint of unconstitutionality, future creationist policy proposals would have to be devised so as not to run afoul of the Court's religious purpose test. Creation science seemed to solve this problem in two ways. First, following Morris's logic, creation science—as a "scientific" theory in its own right—should be deemed no more "religious" than evolution. Therefore, he reasoned, there should be no constitutional justification for excluding it from the curriculum. If evolution could be taught, then so could creation science. Second, Morris's reasoning led to a new "two-model" policy solution (Numbers 2006, 269). Because prohibitions against evolutionary theory were unconstitutional, schools should be required to teach *both* alternative theories of human origins. This two-model policy was first considered by the California Board of Education in 1969, and the strategy would spread like wildfire across the states throughout the 1970s and early 1980s.

[105] For more on bricolage, see Campbell (2001, 165).

Aside from the practical aspects of the new frame, creation science served a second important function: it helped mobilize a new cadre of public supporters. Frames are consequential to the policy process when they can link the collective grievances of potential supporters to the goals of political organizers (Snow et al. 1986). Since the 1920s, creationists have always enjoyed strong support from conservative Protestants, whose religious beliefs go hand in hand with creationism. But during the 1940s and 1950s, many creationists began to embrace the idea of theistic evolution as a result of the American Scientific Affiliation's shift in that direction. Along with their embrace of theistic evolution, many such creationists had long since bailed out of the political movement to ban evolution from public schools. The result was a depleted well of supporters for political creationism, at a time when their advocacy would have been invaluable. Following *Epperson*, creationists would mount a comeback using the ideas of Henry Morris as a foundation, but instead of relying upon the religious underpinnings of flood theory, they emphasized its scientific credentials. The beauty of this approach was in its capacity to blur the divisions between all varieties of creationism, while bridging the chasm between scientists and people of faith.

This phenomenon is best described by the process of "frame extension," in which political leaders expand the scope of their agenda (i.e., pushing for the teaching of creation science as an alternative theory) in order to recruit individuals who might not otherwise have joined the cause.[106] The impressive results of adopting creation science as the banner of all creationism are reflected in public beliefs about human origins. Since 1982, public opinion polls indicate that 43 to 47 percent of Americans believe that Creation occurred as described in the Bible, 35 to 40 percent believe that God guided evolution, and a mere 9 to 14 percent believe in evolution without God (Bishop 2007, 23).[107] In other words, as long as creationists can successfully frame their proposals so as not to alienate those individuals who still retain some role for God in the story of human origins, there remains a substantial base of public support that they can potentially mobilize behind their agenda.

Policy Solutions

"Creation science" represents the conversion of an explicitly religious idea into a quasi-scientific, political idea, which could appeal to a broad cross-section of Americans. In this sense, creation science proved useful as a frame for policy makers during the 1970s because it tapped into a deep well of scientific legitimacy that was created in the wake of Sputnik.[108] Although the precise term "creation science" would take years to reach full saturation among policy makers and the American public, the underlying concept of combining biblically-inspired creationism with scientific epistemology quickly made its way into state legislatures, school boards, and court houses throughout the nation, soon after the Epperson decision was handed down. But

[106] Frame extension is described in Snow et al. (1986, 472-473).
[107] Unfortunately, public opinion data from the early 1970s are unavailable.
[108] According to Campbell (2001), frames are one of four types of ideas that can be influential in the policy process. To that end, frames are inherently normative, providing policy makers with the symbols and concepts necessary to legitimize policy solutions to the public (p. 166, 175).

frames alone do not produce policy change. Also needed are the cognitive ideas, or policy solutions, that spell out how a particular policy problem should be solved.[109]

As Table 1 shows, policy makers considered creationist legislation using a new type of policy solution.[110] In the past, the primary solution advocated by creationists was to ban evolution from the classroom. After *Epperson*, creation scientists adopted a new "two model" approach, which advocated for teaching both evolution and creation science in public schools. There were many different variations of the same theme, but Table 1 attempts to differentiate between three different varieties of the new policy solution.[111] The first set of solutions, labeled "Equal Time," refers to a wide variety of two-model legislation *requiring* that creation science be given equal time in classroom instruction and/or textbook coverage. In most cases, the policies that were considered used the phrase "equal time" as a framing device, but in some instances, similar language was used to the same effect. The term "equal time" was first used in Arizona in 1964 and 1965, when—following the publication of BSCS textbooks—creationists pushed for equal time legislation to teach "divine creation" (Larson 2003, 97). According to Larson, the idea was carried over from the political domain, where broadcasters were required to provide equal time to candidates (pp. 97-98). But the widespread use of equal time as a framing device and policy solution to counter evolution would not take root until after *Epperson*. Similar to equal-time proposals, the second policy solution, labeled "Permissive Equal Time," refers to legislation and other policy initiatives that would have *allowed*, but not required, the teaching of both evolution and creation science in public schools.

The third policy solution, "Balanced Treatment," was similar to "Equal Time," but the precise concept came to be associated with a couple of "model bills" that were drafted in 1979 by creation-science activists. The first model resolution was written by Wendell Bird, a Yale Law School alumnus who went to work for the newly established Institute for Creation Research as a legal adviser and staff attorney. While a student at Yale, Bird published a lengthy legal strategy in the *Yale Law Journal* for the creationism movement (Bird 1978; Larson 2003, 147). The article quickly gained the attention of creationist leaders, including Henry Morris. As a result, one of Bird's first tasks at the ICR was to rewrite the Institute's model equal-time resolution, which Morris had originally written earlier in the decade for use by school boards. The new model resolution began with a summary of the constitutional justification for equal time (as delineated in Bird's law school article). It then invoked Morris's argument that creation science was no more religious than evolution, and evolution no more scientific than creation science; and consequently, both theories should be taught in order for a state to avoid infringing upon students' religious freedom. According to Larson (2003, 149-150):

> Based on these affirmative findings, the resolution then directed schools to give "balanced treatment" to both theories in classroom lectures, textbooks, library materials, and other educational

[109] Campbell calls these cognitive ideas "programs" (p. 166-167), but I use the term "policy solution" to stress that in order for ideas to affect policy change, they must ultimately address some sort of identified policy problem.
[110] Table 1 is not meant to be an exhaustive list of creation-science policy proposals during the 1970s and 1980s but, rather, a sampling of the types of initiatives that were being considered across the United States.
[111] Fowler (1982) uses a similar scheme in his article on the creationist movement, differentiating among three "strategies" used by creationists: (1) banning evolution, (2) requiring equal time for evolution and biblical creationism, and (3) requiring balanced treatment of evolution and creation science.

> programs. As if wishing it could make it so, the resolution concluded by requiring that the treatment of both theories "must be limited to scientific evidence and must not include religious doctrine."

In 1979, the ICR distributed the new resolution "by the thousands" to supporters throughout the country, noting in a disclaimer that the proposed language was to be used by school boards, not legislatures (p. 150). Despite the ICR school board disclaimer, Bird's model resolution was quickly transformed by Paul Ellwanger (founder of the South Carolina-based Citizens for Fairness in Education) into a model balanced-treatment bill for use by state legislatures. Before long, variations of Ellwanger's model bill would be introduced in more than 20 state legislatures between 1980 and 1981 (p. 150).

Finally, Table 1 includes a second category of policy solutions, which I call "Just a Theory." This set of solutions invoked the idea that evolution should be taught as theory, not fact, or that it should be taught as one of several competing theories of human origins. This solution was often used in states where the two-model approach was untenable.[112] It also enjoyed a long history of support among creationists, going back to William Jennings Bryan during the 1920s. Although "Just a Theory" arguments remained a reliable stand-by solution for creation-science activists, most states that attempted to pass creation-science policies during the 1970s and 1980s opted for one of the three varieties of two-model solutions instead (or in combination with "Just a Theory"). It should also be stressed that most of the policy proposals were unsuccessful. Only a few—emphasized in bold—were enacted into state law or passed as a school district policy.

Table 4. Selected state policy actions and solutions, 1970-1987.

Year	State	Venue(s)	Outcome and Description	Source(s)
Two Model: Equal Time				
1969	**CA**	**State Board of Education**	**A member of the American Scientific Affiliation submitted a memo to the Board arguing that both creationism and evolution should be taught. The Board adopted compromise language between the two sides of the debate, but the new policy did not change the policy status quo. Creationists would use the opening to fight for a more rigorous equal-time policy in 1972.**	**(Larson 2003, 123; Nelkin 1977, 82-84, 2000, 108-110, 210; Numbers 2006, 271)**
1970-1972	TX	Judicial	Plaintiffs' request for equal time for creation science dismissed by U.S. District Court. Subsequent appeals to the U.S. Court of Appeals and U.S. Supreme Court were rejected.	(Wright v. Houston Independent School District 366 F.Supp. 1208; Larson 2003, 131-133; Wilhelm 1978, 226-230)

[112] "Just a Theory" solutions were also used concurrently with the two-model approach in a number of states. For clarity, the listings under "Just a Theory" in Table 1 refer only to policy solutions in which the "Just a Theory" argument was used, independent of one of the three two-model approaches.

1971	MI	House & Senate	Bill passed by the House and Senate Education Committee, but died in full Senate. Would have required equal time for the teaching of "the biblical story of creation" in courses where the theory of evolution was taught.	(Wilhelm 1978, 413)
1972	CA	State Board of Education	Equal time proposal failed to secure majority support. Instead, a compromise policy of "anti-dogmatism" was adopted. See text for details.	(Larson 2003, 140; Nelkin 1977, 84-97, 2000, 112-116)
1972	CO	House & Public Refer-endum	House bill died in committee; referendum petition failed to secure enough signatures. Would have required the "equal presentation" of evolution and the "creation-related sciences."	(Mayer 1973, 144-145; Wilhelm 1978, 415-416)
1973	GA	House & Senate	Bill passed Senate, but died in the House. Would have required that "references to any theory of evolution shall be presented only with references to special creation which are equal in content and context."	(Wilhelm 1978, 421-424)
1973	MI	House & Senate	Both bills died in committee. Would have required the teaching of "the story of creation" in courses where the theory of evolution was taught.	(Wilhelm 1978, 418-419)
1973	**TN**	**House & Senate**	**Equal-time measure enacted into law, but ruled unconstitutional in 1975. See text for summary.**	**(Larson 2003, 134-139; Wilhelm 1978, 428-429)**
1973	WA	House	Died in committee. Would have required that both creationism and evolution receive "equally serious consideration and fair treatment."	(Wilhelm 1978, 427-428)
1973	WI	House	Died in committee. Would have required "[e]very public school which provides instruction in evolution [to] provide balanced instruction in all major theories of the origin of life, including that of creation."	(Wilhelm 1978, 420)
1974	GA	House	Nonbinding resolution passed. Urged the state Board of Education to adopt a policy in which the theory of evolution would only be taught if the "divine creation" was also taught in public schools.	(Wilhelm 1978, 436-437)
1974	IN	House	Concurrent resolution died in committee. Would have directed the Indiana Commission on Textbook Adoption "to seek out and to approve textbooks that give an equal amount of emphasis on, and the same attention to, the Genesis account of the origin of the earth and the creation of man as other accounts."	(Wilhelm 1978, 431-432)
1974	KY	House	Died in committee. Would have required biology textbooks to give "commensurate attention to, and an equal amount of emphasis on, the origins and creation of man and his world as the same is recorded in other theories, including, but not limited to, the Genesis account of the Bible."	(Wilhelm 1978, 434-435)

1974	OH	Senate	Died in committee. Would have conferred power upon the State Board of Education to "encourage teachers in all fields, when teaching the origin of life or the universe, to present all major theories, including those of creation and evolution…accord[ing] them proper treatment in time, emphasis, and attitude so as to protect the rights of all students."	(Wilhelm 1978, 438-439)
1974	WA	Public Initiative	Failed to secure enough signatures to bring the initiative before the legislature Identical to bill introduced in the state House in 1973.	(Wilhelm 1978, 440-441)
1975	MI	Senate	Died in committee. Would have required the teaching of "a biblical story of creation" in courses where the theory of evolution was taught.	(Wilhelm 1978, 448)
1975	TX	House	Died in committee. Would have required that textbooks devote "commensurate attention to and an equal amount of emphasis on the origins of or creation of man and the world as stated in other theories, including the treatment of these subjects in the Book of Genesis."	(Wilhelm 1978, 442-443)
1975	WA	House & Senate	Died in committee. Would have required that both creationism and evolution receive "equally serious consideration and fair treatment."	(Wilhelm 1978, 444-447)
1977	IA	House	Died in committee. Would have required the teaching of "the creation theory as supported by modern science" in courses that taught about the origin of humankind.	(Weinberg 1980; Wilhelm 1978, 453-454)
1977	IN	House & Senate	Bill passed by House but died in a Senate committee. Would have required that "[a]ny textbook which presents information regarding the creation of man and the world must present an equivalent amount of information regarding the creation of man and the world as postulated by other theories including, but not limited to, the Genesis account of the Bible."	(Wilhelm 1978, 451-452)
1980	**FL**	**Hillsbor-ough County School Board**	**Policy adopted permitting equal time for the teaching of creation science. Duane Gish and Richard Bliss of ICR testified in support of the policy.**	**(National Center for Science Education 1981a, 29)**
1980	GA	House & Senate	Bills passed in both House & Senate, but a reconciled version was not passed before the end of the session. Would have required equal time for the teaching of evolution and creationism.	(Nelkin 2000, 99; Pipho 1981, 226-228)
1981	CA	Judicial	Affirmed the state Board of Education's anti-dogmatism policy but denied plaintiffs' request that creation science be given equal time alongside evolution. The complaint was filed by Kelly Segraves on behalf of his sons and the C-SRC in California Superior Court.	(*Segraves et al. v. State of California et al., No. 278978*; Larson 2003, 141-142)

1981	GA	House	Died in committee. A revised version of the bill originally introduced in 1980.	(National Center for Science Education 1981a, 29-30; Park 2000, 362)
Two Model: Permissive Equal Time				
1976	**KY**	**House & Senate**	**New law enacted, permitting, but not requiring, teachers to introduce creation theory into courses where evolution was taught.**	**(Wilhelm 1978, 449-450)**
1979-80	IA	Senate	Deferred until 1980 session, then defeated in 1980 by a close vote. Would have permitted, but not required, the teaching of "the concept of creation as supported by scientific evidence."	(Weinberg 1980)
1980	LA	Senate	Died in committee. Scientific creationism bill (details not available.)	(Larson 2003, 153)
1980	OR	Attorney General	The state Attorney General issued an opinion that scientific creationism was permitted, but not required, to be taught by public schools (as long as such instruction was not religious in nature). Essentially punted the issue to local school boards to determine what constitutes religious instruction.	(National Center for Science Education 1981a, 31)
Two Model: Balanced Treatment				
1980	FL	House and Senate	Both bills died in their respective committees. Based on Ellwanger model bill published in 1979.	(National Center for Science Education 1981c, 45)
1980	IL	House	Died in committee. Based on Ellwanger model bill published in 1979.	(National Center for Science Education 1981c, 45)
1980	SC	House	Died on House agenda. Based on Ellwanger model bill published in 1979. (South Carolina was Paul Ellwanger's home state.)	(National Center for Science Education 1981c, 45)
1981	AL	House & Senate	A substitute version of the bill was passed by a Senate committee, but it died at the end of the session. Would have "'encourage[d] the equitable treatment' of scientific creationism and evolution rather than require them to be taught equally."	(Schweinsberg 1981, 31-32)
1981	**AR**	**House & Senate**	**New law enacted, requiring balanced treatment of evolution and creation science (virtually identical to Bird model bill). The law was declared unconstitutional in 1982 by a U.S. district court.**	**(Edwords 1982; Larson 2003, 150-152, 159-164; Moore 1999b)**
1981	CO	Senate	Voted down by committee. Based on Bird model bill. (Bird himself testified in support.)	(Mayer 1981)
1981	IA	Senate	Died in committee. Based on Bird model bill, without the legislative findings of fact section.	(National Center for Science Education 1981b, 33-34)
1981	**LA**	**House & Senate**	**New law enacted, requiring balanced treatment of creation science and evolution (based on Ellwanger model bill). The law was declared unconstitutional in 1987 by the U.S. Supreme Court in a landmark case.**	**(Larson 2003, 153-155, 179; Moore 1999c)**
1981	OK	House	Defeated by committee vote. Based on Bird model bill.	(Sonleitner 1981)

1981	WA	House	Died in committee. Based on Bird Model Bill	(National Center for Science Education 1981c, 45)
Just a Theory				
1971	**OH**	**Columbus Board of Education**	**New policy passed, which encouraged teachers to teach all theories of the origins of life, including creationism, and to emphasize that they are theories, not established fact. The National Center for Science Education claims that board member Paul Langdon, who worked to get the policy passed, was known to send ICR textbooks to science teachers.**	**(National Center for Science Education 1981a, 30)**
1974	**TX**	**State Board of Education**	**Required that evolution be clearly identified as one of several theories of origins, not a fact. Rejected all three BSCS textbooks**	**(Larson 2003, 139)**
1981	**OH**	**Columbus Board of Education**	**Passed the district's 1971 equal time policy again, but with a new title and the same substance (see above).**	**(National Center for Science Education 1981a, 30)**
1984	**TX**	**State Board of Education**	**Eliminated the state Board of Education's anti-dogmatism textbook policy, but substituted new language that theories should distinguished from fact.**	**(Larson 2003, 165)**

Field Bridging

As Table 1 demonstrates, the combination of the creation-science frame with a new set of policy solutions, proved successful in rekindling creationism as a political movement. Even though most of the policy proposals failed to be enacted, the fact that many policy makers throughout the United States were willing to entertain the new creation-science policy solutions was in itself an indicator of the ability of the 1960s-era policy losers to reinvent themselves and emerge from defeat. But there is still a piece of the story missing. Although ideas drawn from the ideational field did in fact play a critical role in the policy process, how did they come to receive such widespread attention from decision makers? After all, policy makers could have simply shrugged off the attempt by creationists to inject new conflict into a seemingly settled policy field.

Despite all of the victories achieved by scientists and their allies (the winners in the policy conflict), their inability to consolidate their gains and put their opponents out of business would lead to the phenomenon of "contested policy change," described in Chapter 2, characterized by a sustainable new policy status quo in which the losers in the original policy conflict fail to go away. But scientists also helped create some of the conditions that would allow creationists to stage a comeback. As we saw in Chapter 4, the strategies employed by scientists and their allies were a double-edged sword. On one hand, working with the National Science Foundation created the opportunity for school districts to begin introducing evolution into their science curricula. On the other hand, by focusing their strategies at the national level and largely

ignoring public opinion, they risked generating a public backlash against the new course material.[113]

Fortunately for scientists, their opponents were not yet in a strong enough position during the 1960s to stop or undo the policy changes that were being made in states and school districts throughout the country. But because the battle of ideas sat simmering just below the surface of the policy debate, there remained just enough of an organized opposition that creationists were able to reorganize, remobilize, and develop the new policy ideas that would help them weather their earlier defeats. Key to creationists' long-term success were two early statewide policy skirmishes in California and Texas, which created a bridge between creationist intellectuals in the ideational field and creationist activists in the policy field. These early efforts would lay the organizational foundation for the emergence of an emboldened creationism countermovement during the 1970s which, once again, would find a sympathetic audience in Tennessee.

California

In 1963, creationists entered the policy fray in California, but not in direct response to the new BSCS textbooks. With the help of CRS President Walter Lammerts, two policy activists—Nell Segraves and Jean Sumrall—petitioned the California Board of Education to request that all biology textbooks label evolution as just a theory, rather than an established fact (Larson 2003; Nelkin 2000; Numbers 2006). Motivated by the Supreme Court's recent ruling in *Abington School District v. Schempp* (374 U.S. 203), which struck down a Pennsylvania statute requiring Bible reading and a Baltimore ordinance requiring recitation of the Lord's Prayer, Segraves and Sumrall set out to "seek justice for the Christian child" (quoted in Nelkin 2000, 107).[114] The idea behind this request was not new; William Jennings Bryan had often decried the teaching of evolution as anything other than a theory during the 1920s.[115] But the political opportunity created by the *Schempp* ruling was new. As Numbers (2006, 270) notes, the Supreme Court—in arguing that government must remain neutral to religion—"ironically opened the door for aggrieved Christians to seek legal protection whenever they felt the public schools were teaching views, such as evolution, hostile to religion." The petition was considered by Max Rafferty, the state Superintendent of Public Instruction and a sympathetic ally to the creationist cause. Relying upon guidance from the state's Assistant Attorney General that the teaching of atheism and agnosticism would be unconstitutional, Rafferty ordered that all textbooks mentioning evolution label evolution as a theory (Larson 2003, 96-97; Nelkin 2000, 107-108).

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[113] According to Rudolph (2002, 175), the "models of dissemination [used by NSF and its curriculum reform committees] were designed for expediency, not for reasoned deliberation of or public participation in determining the fate of education. To raise public levels of rationality in one sphere (the classroom), it was necessary—or so it seemed to them at the time—to subvert it in another (the general public)…Perhaps those involved felt that this was simply the price to be paid to gain a foothold for pure science in the classroom, where young minds could experience its inherent elegance, beauty, and power."

[114] The Segraves' entrée into the policy field is an example of the nationwide backlash among conservative Protestants to the Supreme Court's school-prayer ruling. See David C. Smith, "Prayer Ban Stirs Fundamentalists," *Wall Street Journal*, June 18, 1964. See also Gash and Gonzales (2008) for more on the enduring backlash to the school-prayer decision among the general public.

[115] As noted in the Chapter 3, Bryan described his opposition to teaching evolution as "an established truth," rather than a hypothesis. (Letter from Bryan to Senator W.J. Singletary, Florida State Senate, 4/11/23, Bryan Papers, Container# 37.)

Over the next several years, Rafferty encouraged Segraves and Sumrall to pressure the state Board of Education to go one step further and allow the teaching of creationism alongside evolution in public school classrooms. In 1966, the Board denied their proposal, but a new opportunity for Board consideration arose in 1969, one year after the Supreme Court's decision in *Epperson v. Arkansas*. In October of that year, the Board met to consider a draft version of *The Science Framework for California Schools*, a set of standards and a model science curriculum for all California schools to follow. At the meeting, several board members objected to two paragraphs on evolution. Upon hearing of the controversy, Vernon Grose, an engineer and member of the American Scientific Affiliation, submitted a memorandum to the Board arguing that the public schools should be required to teach creationism alongside evolution (Numbers 2006, 271). The Board agreed with Grose's attempt to bridge the divide between the two sides and, on November 13, it voted unanimously to accept a statement written by Grose for inclusion in the *Science Framework*, which formally recommended that evolution be taught as one of multiple theories of creation, rather than an established fact (Nelkin 2000, 108-110).[116] The statement read, in part:

> All scientific evidence to date concerning the origin of life implies at least a dualism or the necessity to use several theories to fully explain relationships between established data points…While the Bible and other philosophical treatises also mention creation, science has independently postulated the various theories of creation. Therefore, creation in scientific terms is not a religious or philosophical belief. Also note that creation and evolutionary theories are not necessarily mutually exclusives. Some of the scientific data (e.g., the regular absence of transitional forms) may be best explained by a creation theory, while other data (e.g., transmutation of species) substantiates a process of evolution. (Quoted in Nelkin 2000, 210)

Although the statement did not by itself change the state's biology curriculum, it did provide an opening for creationists to pursue equal time for creation science during later rounds of contestation (Larson 2003, 123). The first such political opportunity arose in 1972, as the state undertook a process of deciding which textbooks to include in its biology curriculum. On November 9, the state Board of Education held a contentious public hearing, attended by more than 300 people, to consider the question of whether California's science textbooks should include equal treatment of evolution and creation. Testifying in support of teaching creation science were two familiar faces in the ideational field: Duane Gish of the ICR and Nell Segraves of the C-SRC. Defending the equal-time proposal, Segraves questioned whether "a one-sided presentation in the classroom, based on one philosophy or world view, tends to indoctrinate and convert the student to accept and believe that the one philosophy is the only true and correct one." Testifying in support of evolutionary theory were scientists from the state's universities, including Thomas Jukes, a professor of genetics from the University of California at Berkeley,

[116] See also Jack McCurdy, "State Education Board Backs Teaching of Evolution as Theory," *Los Angeles Times,* November 14, 1969. John Dart, "Origin of Man: Creation Theory Far From Dead," *Los Angeles Times,* December 25, 1969.

and Junji Kumamoto, a scientist from the University of California at Riverside and the chair of the state curriculum commission's science committee.[117]

One month later, after failing to attain a majority in favor of equal time, the Board voted 7 to 1 to adopt a policy of "anti-dogmatism" in the treatment of scientific subjects. Instead of requiring the teaching of creation science, the Board declared that theories of origins should be treated as speculative, and only the mechanisms of origins should be taught, rather than any ultimate cause (Larson 2003, 140; Nelkin 2000, 112-116).[118] The compromise vote occurred just one week after 19 California Nobel Laureates sent a letter to the Board, arguing that "the creation theory is not based on science and does not belong in a science textbook."[119] Although scientists viewed the compromise as a victory, because it ensured that creationism would not receive equal attention in the classrooms, creationists felt "sold out" and disappointed that their requests for equal time to teach creation science were ignored (Nelkin 2000, 116).

These California policy episodes were consequential for two reasons. First, California was the first state in which one of the central figures of the ideational field, Walter Lammerts, helped bridge the ideational and policy fields. By lending his support and encouragement to Segraves and Sumrall, Lammerts created the first partnership between the experts of the ideational field and two leading pro-creationism policy activists in California. Over the ensuing years, Nell Segraves and her son Kelly would develop into the two most prominent creationist textbook advocates in the state, and the organization they co-founded with Henry Morris—the Creation-Science Research Center—would take its place alongside the Creation Research Society and Institute for Creation Research as one of the most active and high-profile creationist organizations of the 1970s and 1980s. The Segraves represented a new type of creationist. Not content simply to wage a battle of ideas with scientists and other religious actors, they expanded the scope of conflict into the policy field by engaging directly with policy makers in positions of influence over the public school system.

The second important consequence of the early California policy battles was the use of the new equal-time policy solution. As the early efforts in California indicate, creationists had yet to develop a common language to refer to their alternative. The policy that was passed by the school board in 1969 referred to "creation theory" (a term coined by the American Scientific Affiliation, with which the leading creationists no longer associated); but soon creationism would come to be known as "creation science" or "scientific creationism" (terms coined by individuals associated with the rival Creation Research Society). Regardless of the precise terms used, this episode clearly demonstrates the first instance in which the underlying concept of creation science was used by creationists at both ends of the spectrum—from theistic evolutionists to flood theorists. Pro-creationism activists would no longer be able to argue the merits of creationism on religious grounds, but would have to adopt the language of science to make their case in a policy environment friendly to scientists.

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[117] Jack McCurdy, "Evolution or Creation? The Fight's Revived," *Los Angeles Times*, November 10, 1972. "California Is Urged to Keep Any Religious Theory on the Creation Out of Textbook," *New York Times,* November 10, 1972.

[118] Jack McCurdy, "Inclusion of Religious Creation Theory in Textbooks Rejected," *Los Angeles Times,* December 15, 1972. "An Old Dispute Reborn in California," *Los Angeles Times*, December 31, 1972.

[119] Edward B. Fiske, "Should God Have Equal Time?" *New York Times*, December 17, 1972.

Texas

Meanwhile, in Texas, similar efforts had been underway since 1964 to restrict the coverage of evolution in high school biology textbooks. In that year, Norma Gabler, a perennial textbook monitor and a key figure in the politics of the Texas textbook adoption process, helped lead the effort to block the adoption of the three new BSCS textbooks (Weinberg 1978, 542). In a hearing on October 14, the State Textbook Committee received testimony from "an estimated 200 people" on all of the state's proposed new textbooks. Most of the witnesses were opposed to the three BSCS books, while only representatives from the books' publishing houses were allowed to provide supportive testimony.[120] Among those testifying against the books were two members of the Creation Research Society (CRS): Thomas Barnes, a physicist at the University of Texas at El Paso, and H. Douglas Dean, a Church of Christ member (Numbers 2006, 265). Despite creationists' opposition to the new textbooks, in the end the Board voted to adopt all three.[121]

Two points need to be stressed regarding this case. First, although the CRS witnesses were able to provide testimony concerning their opposition to the teaching of evolution, they were caught without an adequate answer when asked which alternative textbooks would be acceptable to creationists. As a result, following the Board's vote, Walter Lammerts appointed a textbook committee within the CRS, with the goal of developing a creationist book that could serve as a supplement to the BSCS texts. After several years of writing the book and trying to find a publisher, the CRS published *Biology: A Search for Order in Complexity* (Numbers 2006, 266). Thus began a common pattern by which the creationist organizations of the ideational field would attempt to influence the policy debate by: (1) providing technical guidance to policy advocates at the local level, as well as formal testimony to policy makers whenever possible, and (2) disseminating the ideas of creationism through their own publications.

The second lesson of this episode is mostly applicable to the case of Texas, but it also offers an instructive general lesson about the importance of "venue shopping" (Baumgartner and Jones 1993, 36). Despite the victory for evolution before the Board of Education, Gabler did not give up the fight. Instead, she took her concerns directly to local textbook adoption boards, where she was more successful in persuading local school districts not to adopt any of the BSCS books.[122] Partly because of her efforts, one of the two alternative texts that was adopted (Otto and Towle's *Modern Biology*) ended up outselling all of the three BSCS books combined (Weinberg 1978, 542). Because of the singular efforts of Gabler and other citizen textbook monitors, Texas policy makers would be forced to deal with the controversy over evolution as part of their textbook adoption process for many years to come. Additionally, Gabler's success highlights a critical characteristic of all policy conflicts in the United States: the ability of policy activists to weather defeat by seeking out alternative policy venues. This feature of the American

[120] Anonymous, "Witnesses Flay Three Textbooks for Treatment of Evolution," *Dallas Morning News*, October 15, 1964.

[121] The final vote came on November 9, 1964 when, following a 3-hour hearing, the State Board of Education voted 14 to 6 to adopt a total of five biology textbooks, including the three published by the BSCS (Richard M. Morehead, "Disputed Biology Textbooks OK'd for Texas School Use," *Dallas Morning News*, 11/10/1964).

[122] Under state policy at the time, schools could choose whichever books they wanted to use from the list approved by the state Board of Education (Weinberg 1978, 542).

policy process is even more pronounced in certain policy domains, such as public education, in which authority is decentralized among numerous units of local government.

Another common tactic of venue shopping (employed by scientists and their allies during the 1960s to great effect) is to turn to the judicial system for redress. In 1970, the first post-*Epperson* court case to use equal time as a policy solution was filed in Texas. On November 17, Leona Weber filed suit in U.S. District Court on behalf of herself, her daughter Rita Wright, and other students in the Houston Independent School District. The suit sought to prevent the teaching of evolution in the school district, alleging that such teaching violated the plaintiffs' free-exercise rights and constituted an establishment of religion. The suit also alleged that the district's policy violated the doctrine of neutrality articulated by the U.S. Supreme Court in *Epperson*, and, as a remedy, plaintiffs proposed that the court require "equal time" for all creation theories to be taught in the classroom.

In 1972, the court ruled against the plaintiffs on procedural grounds before the case ever went to trial, a ruling which was affirmed by the Fifth Circuit Court of Appeals in 1973. The U.S. Supreme Court also denied to hear the appeal in 1974. Although the outcome did not change the policy status quo, it was a temporary setback to equal-time policy solutions and a win for the school district's right to teach evolution (Larson 2003, 131-133; Moore 1999a, 10-11; Wilhelm 1978, 226-230). Most important, this case reveals the limitations of the equal-time approach when divorced from a creation-science frame. As Larson (2003, 131) notes, the plaintiffs in *Wright* sought to defend the teaching of *biblical* creationism, rather than promoting creation *science* as a legitimate and workable alternative. Consequently, the judge in the case was reluctant to impose an equal-time solution on the Houston school district that, in his view, would be impossible to implement:

> If the beliefs of fundamentalism were the sole alternative to the Darwinian theory, such a remedy might at least be feasible. But virtually every religion known to man holds its own peculiar view of human origins. Within the scientific community itself, there is much debate over the details of the theory of evolution. This Court is hardly qualified to select from among the available theories those which merit attention in a public school biology class. Nor have Plaintiffs suggested to the Court what standards might be applied in making such a selection.
>
> Plaintiffs' case must ultimately fail, then, because the proposed solutions are more onerous than the problem they purport to alleviate. For this Court to require the District to keep silent on the subject of evolution is to do that which the Supreme Court has declared the Arkansas legislature is powerless to do. To insist upon the presentation of all theories of human origins is, on the other hand, to prescribe a remedy that is impractical, unworkable and ineffective. (*Wright v. Houston Independent School District 366 F.Supp. 1208*, 1211)

Tennessee

In 1972, Michigan and Colorado were the next two states where creationists attempted (unsuccessfully) to pass statewide equal-time policy solutions; and, in Columbus, Ohio, their efforts actually yielded success at the school-district level (see Table 1). But the first notable statewide success did not occur until 1973, when the state of Tennessee enacted a new law requiring that all textbooks used by public schools specifically state that the theory of evolution is just a theory and not a scientific fact. The law also required that each textbook provide "commensurate attention to, and an equal amount of emphasis on, the origins and creation of man and his world as the same is recorded in other theories, including but not limited to, the Genesis account in the Bible" (Wilhelm 1978, 428-429). In other words, the law invoked both the "Just a Theory" and "Equal Time" policy solutions described above. The man behind the legislation was Russell Artist, a Tennessee biology professor, member of the Creation Research Society, and co-author of the CRS textbook, *Biology: A Search for Order in Complexity*. Artist initially tried to gain approval before the State Textbook Commission, but when that effort failed, he turned to the legislature, putting forward his book as a model for how equal time might be achieved in the classroom (Larson 2003, 134-135).

Soon after the law was enacted, opponents mounted legal challenges. Frederic Le Clercq, a law professor at the University of Tennessee, sought support from the National Association of Biology Teachers (NABT) to file a federal suit against the law. The NABT agreed to the partnership, hiring Le Clercq as its counsel in the case. The suit was filed by NABT on behalf of three local members: Joseph Daniel, Arthur Jones, and Larry Wilder. Writing in *The American Biology Teacher* shortly after the case was filed, Le Clercq predicted victory on constitutional grounds, despite creationists' attempt to reframe creationism in scientific terms:

> The fundamentalist movement to win equal time for creation doctrine in science and biology textbooks has risen phoenixlike from the ashes of *Epperson*. It will probably be consumed once again by the Establishment Clause, although individual students may well be excused from science and biology classes, or portions thereof, under the Free Exercise rationale of *Yoder*…Only judicial insistence on reasonably ascertainable standards of selection and appropriate procedural safeguards to secure the right of review can forestall government control of the flow of ideas that the First Amendment was intended to prohibit. (Le Clercq 1974, 145)

Before the state of Tennessee had a chance to respond to the Daniel/NABT complaint, another suit was filed in state court by Americans United for Separation of Church and State on behalf of Harold Steele and two other local members. In its complaint, the plaintiffs argued that the new law violated both state and federal prohibitions against the establishment of religion. Because of this state action, the federal court involved in the *Daniel* case decided to defer action pending a decision by the state courts. As a result, the NABT intervened in the *Steele* case, while also appealing the federal court's decision to delay action.

Then, in 1975 the federal appellate court involved in the *Daniel* case issued a ruling—without having heard any substantive arguments—declaring the law unconstitutional. In its

decision, the court identified two aspects of the law that violated the Establishment Clause: (1) the law required evolution to carry a disclaimer that it was a theory and not a fact, but it exempted the Genesis account of creation from carrying such a disclaimer; and (2) the law excluded satanic and occult theories of creation from being taught, but the court deemed that the exclusion "improperly embroiled the state in identifying and censoring particular religious or anti-religious views." Following the federal appellate court's decision, the Tennessee Supreme Court issued a short concurring opinion in the *Steele* case, effectively ending both legal challenges in favor of the pro-evolution organizations (Larson 2003, 134-138; Wilhelm 1978, 232-239). Subsequently, creationists attempted to pass "balanced treatment" legislation in the Tennessee legislature, but none of their efforts was successful (see Table 1).

The legal defeat in Tennessee might have spelled the end of the new two-model strategy, but by the mid-1970s, creationists had made strides toward rebuilding their national movement, and to call it a day because of a single court's negative decision (after achieving such a momentous victory in the Tennessee legislature) was unlikely to happen. Although states were increasingly adopting policies favorable to evolutionary theory, creationists had not only the policy solutions and frames to reengage the policy process on equal terms with scientists (or so they believed), but also the organizational capacity, public support, and religious & political alliances necessary to withstand setbacks like Tennessee.

Organizations

Working through their organizations, creationists developed a cadre of national leaders who could be dispatched to states to supply technical assistance to policy makers and activists and, more important, to promote creationism as a legitimate scientific alternative to evolution. As the political activities in California, Texas, and Tennessee illustrate, the Creation Research Society was most active during this time in supplying the ideas and technical experts to assist policy makers throughout the country. But the CRS was not the only active creationist organization during this period. In 1970, California creationism activists Nell Segraves and her son Kelly joined with CRS co-founder Henry Morris to open the San Diego-based Creation-Science Research Center (C-SRC). The C-SRC was initially founded as an arm of the Reverend Tim LaHaye's Christian Heritage College, and its primary purpose was to produce creationist teaching materials and research on the biblical flood of Noah (Larson 2003, 123; Lienesch 2007, 206-207). Despite a promising beginning, Morris was unable to make the partnership work with the two Segraves, and in 1972, he left the organization to found the Institute for Creation Research (ICR) (Numbers 2006, 314). Interestingly, the split between Morris and the Segraves is strong evidence of the two very different organizational logics underlying the ideational and policy fields. In Morris's account:

> [I]t became more obvious all the time that the two groups in the CSRC had different interests and wanted to pursue different methods, even though we were in agreement doctrinally. Both desired to promote creationism, but we believed it should be done by educational and scientific means, whereas the group formerly known as Bible-Science Radio [represented by the Segraves]

> believed that political and promotional efforts would be more productive. (Morris 1993 [1984], 268)

Following the split, the C-SRC, under the leadership of Kelly Segraves, continued to publish creationist teaching materials, while pushing for new policies to allow and defend the use of their materials in the public schools (Larson 2003, 129).

Although the C-SRC began its organizational life as a California-focused institution, it would play an important national role in helping to rekindle the creationism movement. After the departure of Morris, Kelly Segraves stepped up the C-SRC's legal advocacy. According to Toumey (1994, 110):

> [The] CSRC stayed busy with its lobbying. It participated in the unsuccessful defense of Tennessee's 1973 Equal Time for Genesis law; it sued to require that the Biological Science [sic] Curriculum Study return publishing revenues to the federal government; its Creation Creed Committee threatened to monitor local school boards in their presentation of evolution; and it dabbled in opposing sex education.

Despites its initial flurry of activity, the C-SRC's goals began to diverge from creationists pursuing equal time for creation science. By focusing much of its advocacy on trying to equate evolution with atheism—playing up the religious angle, rather than emphasizing the new scientific frame—the C-SRC was soon relegated to the margins of the national creation-science movement, as creation science, in combination with equal time and balanced treatment, became the preferred solutions for policy makers to consider (p. 111-112). In the words of Nell Segraves, "Our organization in particular never wanted to have a science-versus-science battle in the classroom…We wanted to keep it on a constitutional basis only: the right of the Christian child and the defense of the Christian child against offense" (quoted in Toumey 1994, 112). Adding to the C-SRC's troubles were a series of bad financial decisions that left the organization saddled with debt and unable to support a large staff (Numbers 2006, 314).

As the C-SRC began to play less of a role in the creation-*science* movement, the ICR and CRS expanded their influence throughout the country. Within the ICR, Morris remained true to his educational and scientific orientation, toiling behind the scenes to create an institutional infrastructure that could sustain the burgeoning creation-science movement beyond the 1970s, while Associate Director Duane Gish traveled the country to spread the word about creation science. To that end, Gish made frequent appearances on the debate circuit, in which he argued the merits of creation science against prominent evolutionists of the day. Such events were popular on university campuses and were known to draw up to 5,000 attendees (Numbers 2006, 316). Altogether, ICR-sponsored debates (featuring Gish, Morris, and other ICR staff) "helped the ICR directly reach more than 600,000 persons during its first ten years" (p. 317). Although the ICR's budget started off small (Morris 1993 [1984], 273), eventually the organization developed a sustainable stream of funding from small gifts, staff honoraria, and publication royalties (Numbers 2006, 315).

Given its origins as an organization devoted to education, rather than political advocacy, the ICR established three focus areas—research, teaching, and literature—dedicated to the proposition that "persuasion is more effective in the long run than coercion" (Morris 1993 [1984], 283). To that end, during the 20 years after its founding, ICR staff produced over 75 creationist books and other written works, in addition to establishing a monthly newsletter, called *Acts & Facts*, distributed for free to 100,000 individuals on the organization's mailing list (p. 288-289).[123] Additionally, the ICR sponsored scientific research (not subject to mainstream scientific peer review) on questions that could lend support to flood geology, such as the phenomena of overthrusting and anomalous fossils (p. 291), and it conducted a nationwide education campaign in religious organizations and universities to spread the "gospel of creation" (pp. 296-304).[124] By the 1980s, the ICR was widely recognized as "the flagship of creation science" (Lienesch 2007, 206-207).

Likewise, the Creation Research Society had succeeded in extending its institutional reach throughout the United States. By 1973, the CRS claimed nearly 2,000 members, having recruited many of those individuals from the rival American Scientific Affiliation (Numbers 2006, 259). But perhaps most significant, because of Norma Gabler's advocacy against evolution-oriented textbooks in Texas, the CRS decided to write its own creation-oriented biology text (Morris 1993 [1984], 217).[125] In 1971, under the leadership of Morris (who had assumed the presidency of the CRS in 1967), the book was published under the title, *Biology: A Search for Order in Complexity* (p. 222). Without this text, steeped as it was in the tenets of flood theory, policy makers and creationist activists would not have had a viable, prepackaged alternative to evolutionary theory.[126] Additionally, the new biology textbook provided a revenue stream for the CRS, bringing in $6,500 in just the first two years after its publication (Numbers 2006, 267). With these book royalties in hand, the CRS was able to join the ICR in sponsoring research to demonstrate the veracity of flood theory (pp. 287, 315). Despite the two organizations' conviction that sustained scientific research could substantiate flood geology, they never succeeded in overturning prevailing scientific theories in the fields of geology or biology, and the empirical research of their supporters was universally rejected by peer-reviewed scientific journals during the 1970s and 1980s (Numbers 2006, 279-285; Scott and Cole 1985).

In short, the big-three creationist organizations played a critical role in rekindling the national creationism movement—supplying ideas, leaders, and other resources to the policy-

[123] The 100,000-person mailing list claim was made by Morris, but the number may be inflated.

[124] Morris's account of the research conducted by the ICR seems slightly inflated. According to Numbers (2006, 315-316), the ICR's research output was sparse and consisted to a large extent of reviews of the extant scientific literature for material favorable to creationism.

[125] As early as 1964, the CRS recognized the need to provide an alternative to evolution and began a nationwide search for textbook authors. In the words of Walter Lang, founder of the Bible Science Association and a member of a CRS textbook task force, "There is complete lack [sic] of scientific texts at this time to support the creationist theory. In California, school authorities have indicated a willingness to consider such texts if they can be produced." Milt Brouhard, "Visiting Task Force Searches for Textbook Authors," *Los Angeles Times*, November 13, 1964.

[126] Arizona is a case in point: Although the first equal-time measures were introduced there during the mid-1960s, none of the bills gained traction, because a viable creation-science alternative did not yet exist. Following defeat of the equal-time bill in the state House of Representatives, a local Southern Baptist pastor reverted to the old policy solution of attempting to ban evolution by popular referendum (an effort that failed due to a lack of nominating signatures). Anonymous, "Arizona Clergy Split on Evolution Teaching: Baptist Pastor Files for Referendum to Outlaw Theory on Atheistic Grounds," *Los Angeles Times*, May 25, 1964.

making process in key states during the early 1970s. But the greatest contribution to rebuilding the movement was the ability of the CRS and ICR to bring together the different strands of creationism under a common science-oriented frame. Through the use of diverse forms of media and personal persuasion, creation science became a commonly accepted idea that most creationists could rally behind. According to Numbers (2006, 269):

> By the mid-1970s, the advocates of flood geology, such as Morris and [John] Moore, had securely attached the synonymous tags "creation science" and "scientific creationism" to the Bible-based views of George McCready Price. This relabeling reflected more than euphemistic preference; it signified a major tactical shift among strict six-day creationists. Instead of denying evolution its scientific credentials, as biblical creationists had done for a century, the scientific creationists granted creation and evolution equal scientific standing.

This strategy proved decisive to the creationism movement following the legal defeat in Tennessee. Tennessee's "Genesis law" faced two critical flaws: it attempted to frame evolution in religious terms (i.e., a religion of atheism); and although it required evolution to be labeled as just a theory, it did not impose the same requirement upon creation science. In the future, creationists would have to do a better job emphasizing the scientific aspects of creation science, while downplaying the religious arguments against evolution, if their equal-time proposals were to withstand further constitutional scrutiny.

To that end, the ICR hired Wendell Bird, a Yale University alumnus, to draft a new two-model policy solution that could be used by local school boards. As discussed above, Bird had written an article in the *Yale Law Journal*, spelling out the details of a new policy solution—similar to equal time—which would require "balanced treatment" of evolution and *scientific* creationism in public schools. By shifting the focus from biblical creationism to creation science, Bird (and other legal scholars) believed that the new approach might be able to pass constitutional muster (Numbers 2006, 351-352). According to Moore (1999a, 14):

> Bird built his 'equal time' argument on Supreme Court decisions which recognized the rights of religious minorities such as Jehovah's Witnesses and the Amish to practice their beliefs without state interference…In doing so, Bird held the teaching of evolution not to the scientific standard of testable evidence, but rather to the political concept of fairness and equal time.

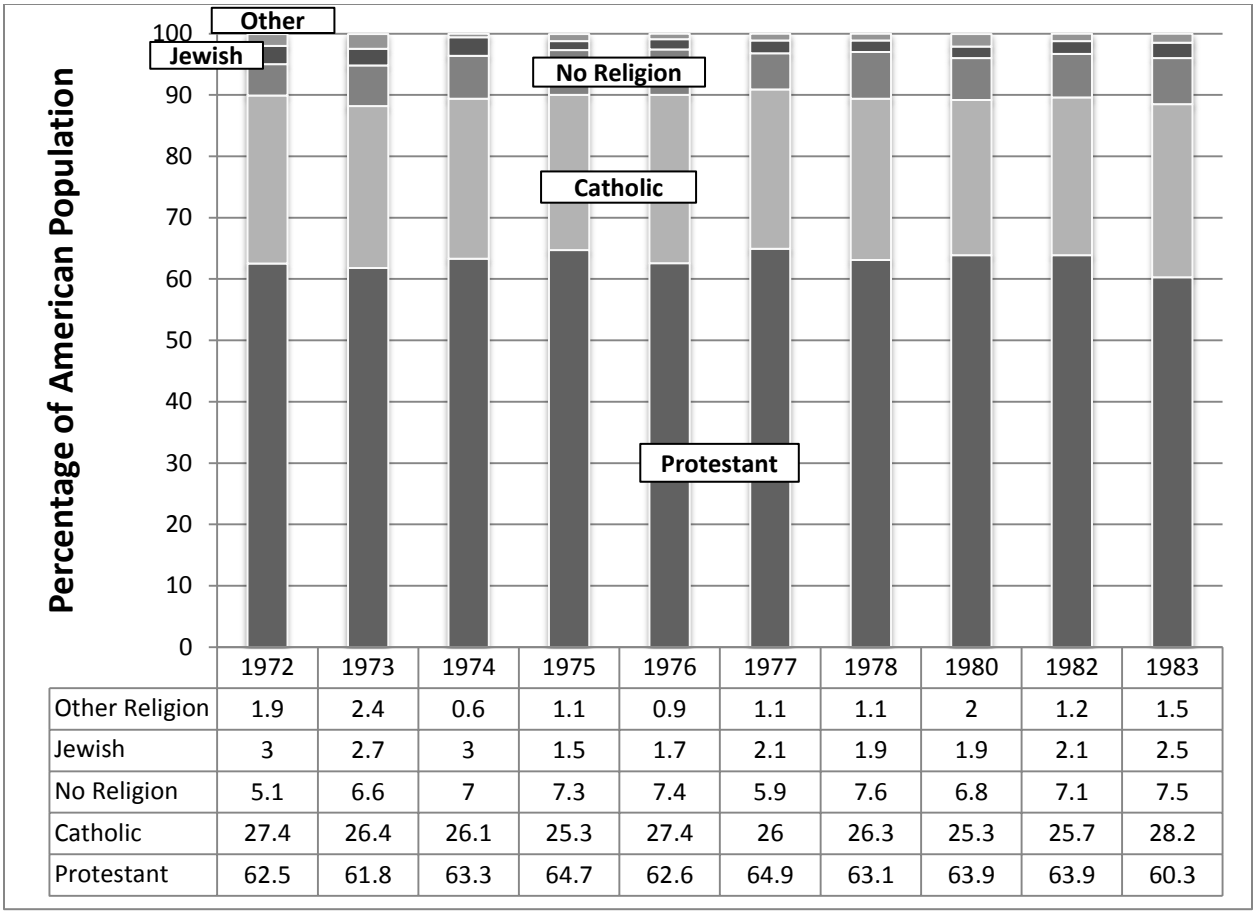
The ICR intended to promote the policy solution at the local level (i.e., among school boards), distributing Bird's model resolution to thousands of supporters across the country in 1979. In addition, the ICR republished its textbooks in two forms: one for Christian schools, the other for public schools (Moore 1999a, 15). But soon the new policy solution began to take on a life of its own, beyond the control of Bird and his colleagues at the Institute.

In 1978, Paul Ellwanger founded the South Carolina-based creationist organization, Citizens for Fairness in Education (CFE), with the help of like-minded "textbook watchers" (Morris 1993 [1984], 334; Nelkin 2000, 139). When he learned about the ICR/Bird balanced-treatment resolution, Ellwanger took it upon himself to modify the policy solution so that it could be introduced in the South Carolina Legislature (Larson 2003, 150). Although the effort failed to gain legislative traction in Ellwanger's home state (National Center for Science Education 1981c, 45), the revised policy solution spread to more than 20 state legislatures between 1980 and 1981 (Larson 2003, 150). Among the states to take up and enact the balanced-treatment measure into law were Arkansas and Louisiana, which would become the centers of policy conflict during the 1980s. These two cases will be discussed in greater detail below.

The critical role played by Ellwanger and his organization needs to be highlighted. Unlike the ICR and CRS, which were determined to maintain their status as educational organizations rooted in the ideational field, Citizens for Fairness in Education was primarily a political organization (in the sense described in Chapter 2). Ellwanger had no qualms about getting deeply involved in the political machinations of state legislatures throughout the country, and he would play an essential part in helping to mobilize political supporters in select states. Ellwanger's motivations were made clear in the written materials collected during the *McLean* court case (discussed below), in which he revealed that his goal was to "kill evolution instead of playing these debating games that we've been playing for over a decade already" (quoted in Nelkin 2000, 139). Without the organizations of the ideational field, however, CFE would not have had such a strong ideational base to stand upon. In short, CFE provides a concrete example of the mechanism of field bridging between the ideational and policy fields. Altogether, the organizational infrastructure composed of the ICR, CRS, C-SRC, and CFE was a critical variable in helping creationists to rekindle and rebuild their movement in the wake of *Epperson*.

External Support

Reinforcing creationists' strong organizational base was a network of supporters and allies drawn from three sources: the general public, conservative religious organizations, and the national political field. Figure 7 shows the distribution of religious preferences among the American population from 1972 to 1983 according to the General Social Survey (GSS). During this period, Protestants represented roughly 60 to 65 percent of the total population, Catholics 25 to 28 percent, and Jews 2 to 3 percent. An additional 1 to 2 percent belonged to some "other" religion, and 5 to 7 percent said they belonged to no religion at all.

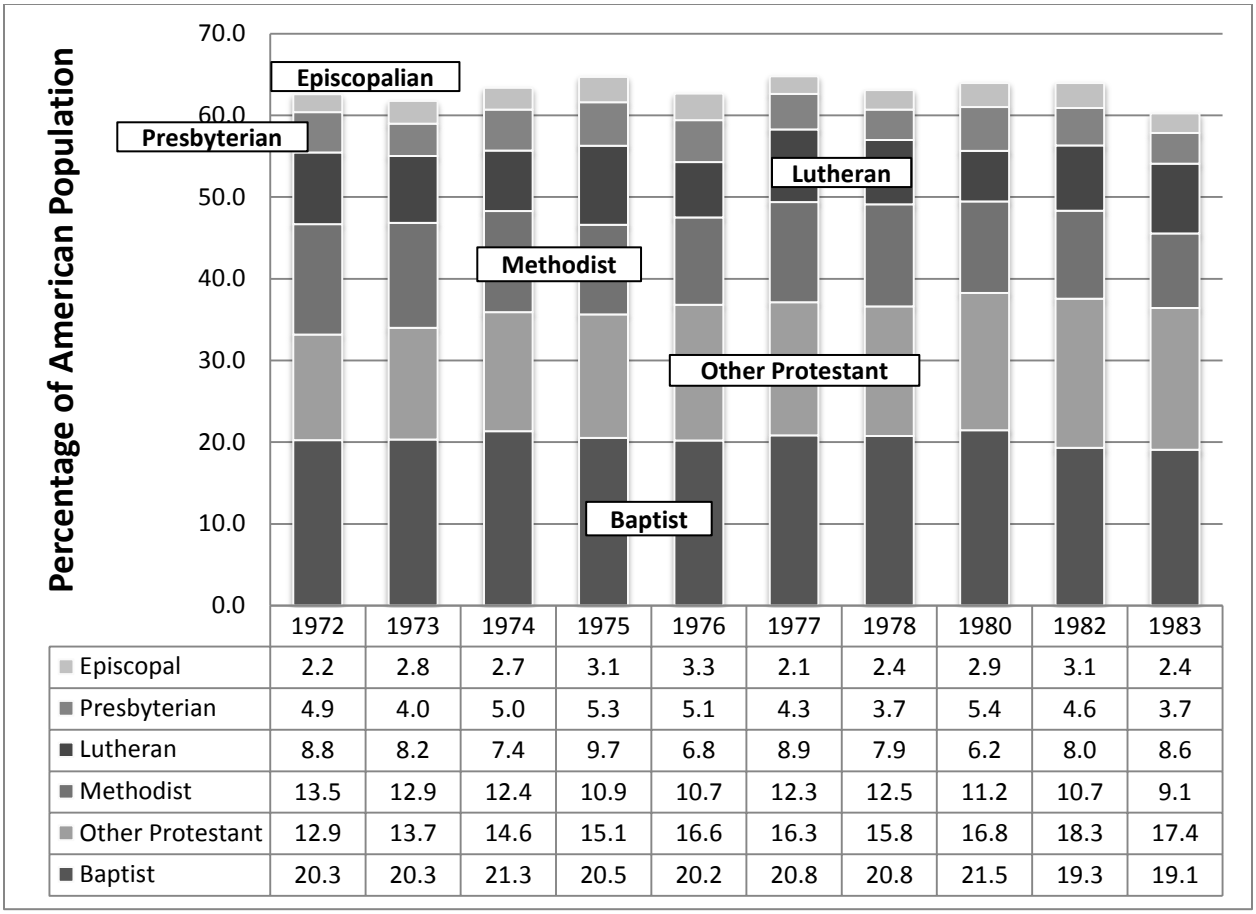


	1972	1973	1974	1975	1976	1977	1978	1980	1982	1983
Other Religion	1.9	2.4	0.6	1.1	0.9	1.1	1.1	2	1.2	1.5
Jewish	3	2.7	3	1.5	1.7	2.1	1.9	1.9	2.1	2.5
No Religion	5.1	6.6	7	7.3	7.4	5.9	7.6	6.8	7.1	7.5
Catholic	27.4	26.4	26.1	25.3	27.4	26	26.3	25.3	25.7	28.2
Protestant	62.5	61.8	63.3	64.7	62.6	64.9	63.1	63.9	63.9	60.3

Figure 7. American religious preferences.[127]

Among those survey respondents who said they were Protestant, the GSS also recorded their denominational affiliations. Figure 8 shows the distribution of Protestant denominations from 1972 to 1983. Baptists represented the largest percentage of Protestants, with 19 to 21 percent of the total American population. "Other" Protestants represented 13 to 18 percent of the total population, Methodists 9 to 13 percent, Lutherans 7 to 10 percent, Presbyterians 4 to 5 percent, and Episcopalians 2 to 3 percent. Unfortunately, the GSS did not change its survey methodology to capture more refined denominational affiliations until 1984 (e.g., Southern Baptists, Missouri-Synod Lutherans). Nonetheless, even without a more nuanced view of American Protestants during this time period, these data provide useful context to help understand the support role played by religious organizations and individuals in the creation-science movement.

[127] General Social Survey (Smith et al. 2011).



	1972	1973	1974	1975	1976	1977	1978	1980	1982	1983
Episcopal	2.2	2.8	2.7	3.1	3.3	2.1	2.4	2.9	3.1	2.4
Presbyterian	4.9	4.0	5.0	5.3	5.1	4.3	3.7	5.4	4.6	3.7
Lutheran	8.8	8.2	7.4	9.7	6.8	8.9	7.9	6.2	8.0	8.6
Methodist	13.5	12.9	12.4	10.9	10.7	12.3	12.5	11.2	10.7	9.1
Other Protestant	12.9	13.7	14.6	15.1	16.6	16.3	15.8	16.8	18.3	17.4
Baptist	20.3	20.3	21.3	20.5	20.2	20.8	20.8	21.5	19.3	19.1

Figure 8. American Protestant denominational affiliations.[128]

As discussed above, the modern creationism movement was largely a fight led by Protestants. Although there were undoubtedly Catholics and Jews who shared the anti-evolution beliefs of their Protestant brethren, most of the organized resistance to evolution was generated by Protestant religious organizations, which laid claim to roughly 60 to 65 percent of all Americans. We also know that the three principal denominations providing organized support to the creation-science movement were the Southern Baptist Convention, the Missouri-Synod Lutheran Church, and the Seventh-Day Adventist Church, in addition to a number of smaller conservative Protestant denominations, such as the Jehovah's Witnesses and Latter-Day Saints (reflected in the "Other Protestant" category of Figure 8) (Numbers 2006, 331-350). If only half of all Protestants subscribed to a conservative view of their religion (a reasonable assumption given the explosive growth of conservative denominations during this time; Finke and Stark 2005, 244-248), then it's fair to say that 30 to 40 percent of all Americans (including conservative Catholics and orthodox Jews) belonged to a church whose views were out of sync with modern science.

Given the paucity of survey data from this time period, these estimates are necessarily rough, but they are not out of line with a 1982 Gallup survey, in which respondents were asked about their belief in human origins. The survey question read as follows:

[128] General Social Survey (Smith et al. 2011).

> Which of these three statements COMES CLOSEST to describing your views about the origin and development of man – God created man pretty much in his present form at one time within the last 10 thousand years; Man has developed over millions of years from less advanced forms of life. God had no part in this process; or Man has developed over millions of years from less advanced forms of life, but God guided this process, including man's creation? (Gallup 1982)

As Figure 9 shows, 44 percent of respondents said they believed that humans were created by God within the last 10,000 years (i.e., the view espoused by the ICR and CRS). On the other end of the continuum, a mere 9 percent said that they believed in a millennia-long human development process from lesser forms of life, without any intervention by God. And between these two worldviews, approximately 38 percent said that humans developed over millions of years through a process initiated by God (i.e., the "theistic evolution" position espoused by numerous mainline and liberal churches). Although these data cannot tell us the extent to which Americans were actively engaged in the creation-science movement, they do paint a compelling picture of an American public that was poised to provide, at a minimum, permissive support to creationists as they engaged the policy process.

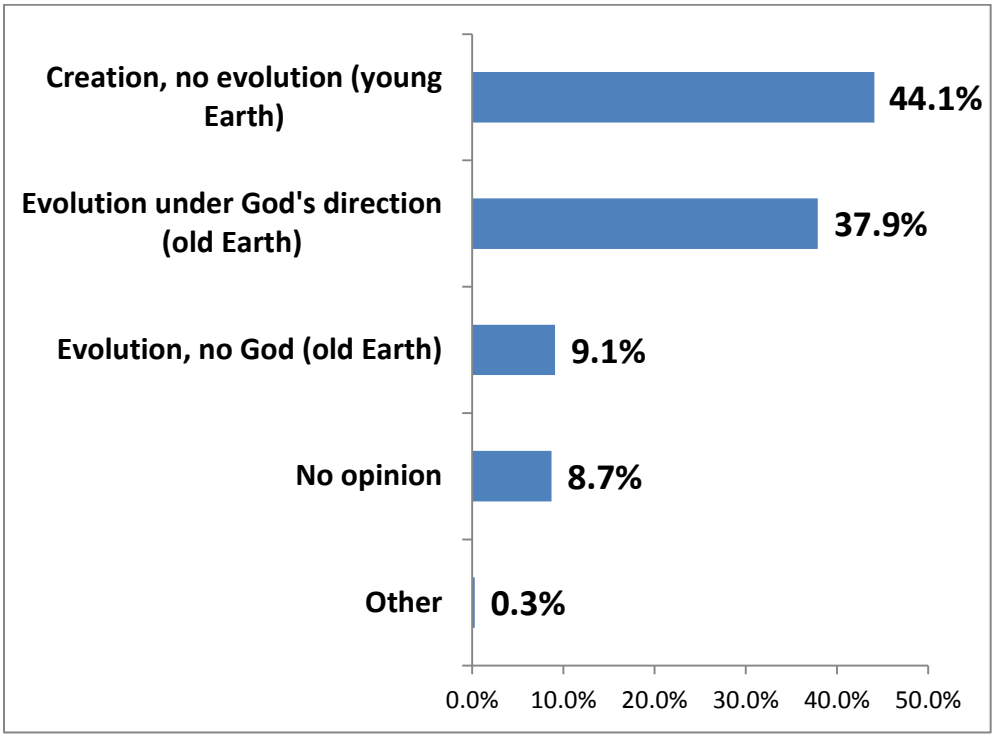


Figure 9. American opinions concerning human origins in 1982.[129]

On the central question of the policy conflict, survey data describe an American public decidedly more resolute about the two-model policy solution than their beliefs might have

[129] Gallup Poll #198G, July 23-26 1982.

predicted. In September 1981, a *Time Magazine* survey conducted by Yankelovich, Skelly, and White asked respondents whether they favored or opposed "making it mandatory to teach the Biblical version of evolution in the classroom as well as Darwinian scientific theory which is taught now."[130] Fifty percent said they favored the requirement, 40 percent said they opposed it, and 10 percent said they were unsure. Unfortunately, the question wording of this poll makes it hard to interpret the results, because it asked about the biblical version of *evolution*, rather than creation, and even minor changes in wording can have an effect on the results (Bishop 2006). Even with the problematic question wording, a bare majority said they supported teaching both theories of human origins.

One month later, *NBC News* and the *Associated Press* conducted a survey with better question wording and three possible answers, rather than the either/or wording of the *Time* poll. The survey asked, "Do you think public schools should teach only the scientific theory of evolution, only the Biblical theory of creation, or should schools offer both theories?"[131] When framed in the two-model terms of the creation-science movement, an overwhelming 76 percent of Americans said that both theories should be taught, while 8 percent said only the scientific theory, 10 percent said only the biblical theory, and 6 percent were unsure. Although the survey seems to indicate significant support for the two-model approach, it should be noted that the survey did not suggest whether or not the teaching of both theories should be required, rather than simply permitted.

Finally, Gallup conducted a survey in April 1982, in which respondents were asked, "Have you heard or read about the debate between those who believe in the theory of evolution and those who believe in the theory of creationism?"[132] Sixty-two percent answered yes, and 38 percent answered no, indicating a relatively high degree of salience concerning the policy conflict as a whole (especially considering the marginal nature of the issue compared to other pressing issues of the day). In the same poll, respondents also were asked, "Do you agree more with the theory of evolution or more with the theory of creationism?" A majority (54 percent) said they agreed more with the theory of creationism and only 15 percent agreed with evolution (4 percent agreed with both about the same, and 27 percent held no opinion).

Although these three surveys provide only a snapshot of public opinion during the early 1980s, they all describe an American public engaged with the evolution-creationism debate and at least willing to entertain the possibility of policy solutions that would permit creation science to be taught in public school classrooms. Given the importance of public opinion in helping to connect social movements to the policy process (Burstein 2003; Soule and Olzak 2004), these data should be deemed a significant factor in the ability of the creation-science movement to attain consideration of its agenda in state legislatures and school boards throughout the country.

Additionally, creation scientists enjoyed significant support from conservative religious organizations and their members during the 1970s and 1980s. Three, in particular, played more than just a permissive role in the conflict: the Missouri-Synod Lutheran Church, the Seventh-Day Adventist Church, and the Southern Baptist Convention. First, the Missouri Synod Lutheran

[130] Time Poll, conducted by Yankelovich, Skelly & White, September 15-17, 1981.
[131] NBC News/Associated Press Poll, October 25-26, 1981.
[132] Gallup Poll, April 2-5, 1982.

Church had been actively involved in the ideational field since at least 1932, when church leaders adopted a statement supporting a young-earth interpretation of Genesis:

> We teach that God has created heaven and earth, and that in the manner and in the space of time recorded in the Holy Scriptures, especially Gen. 1 and 2, namely, by His almighty creative word, and in six days. We reject every doctrine which denies or limits the work of creation as taught in Scripture. In our days it is denied or limited by those who assert, ostensibly in deference to science, that the world came into existence through a process of evolution; that is, that it has, in immense periods of time, developed more or less of itself. Since no man was present when it pleased God to create the world, we must look for a reliable account of creation to God's own record, found in God's own book, the Bible. We accept God's own record with full confidence and confess with Luther's Catechism: "I believe that God has made me and all creatures."[133]

Then, in 1964, the Lutheran pastor Walter Lang established the Bible-Science Association as a complement to the Creation Research Society. According to Numbers (2006, 264), the two organizations participated in a "codependent relationship, with the CRS catering to the needs of scientists while the BSA carried creationism to the masses." Although not an official organ of the Missouri Synod Church, the BSA was composed primarily of Lutherans and focused much of its creationism ministry on outreach to other Lutherans—holding conferences every other year, organizing national speaking tours for the organization's leaders, and distributing the *Bible Science Newsletter* to tens of thousands of subscribers (Nelkin 2000, 83-84; Toumey 1994, 125-126). Unlike the CRS, which attempted to reconcile biblical authority with scientific authority, the BSA adopted a more religious stance to defending creationism against evolution. As Toumey notes, the BSA was not a central player in the battle of ideas or the ensuing policy conflict, but it did play an important role in the movement as a whole:

> A movement claiming to adhere to inerrant scriptural authority must have a faction that appoints itself to guard that source against all critics. If the Bible-Science Association was not doing this, then the responsibility would devolve to ICR or CRS to do the work of compelling every item of science to affirm the authority of the Bible. In a sense, BSA is only taking the CRS-ICR philosophy to its logical extreme. (Toumey 1994, 131)

Meanwhile, within the denomination itself, the Missouri Synod Church faced dissent from some of its more liberal members on the issue of evolution, but by the end of the 1970s, the "Lutheran conservatives, like their Adventist brothers and sisters, had repulsed liberalism and evolution, but at a great price" (i.e., a schism resulting in the loss of about 4 percent of the denomination's members) (Numbers 2006, 335).

[133] The Lutheran Church–Missouri Synod, "Of Creation," http://www.lcms.org/pages/internal.asp?NavID=565, accessed March 3, 2011.

Additionally, as we have seen, the Seventh-day Adventist Church played a prominent role in the development of modern creation science. The very foundation of flood theory can be traced back to the visions of the church's founder, Ellen White. But the Seventh-day Adventists contributed more than just ideas to the modern creation-science movement; they also committed organizational resources to the cause. In 1957, church leaders established a "Committee on the Teaching of Geology and Paleontology"—which would become known as the Geoscience Research Institute (GRI)—and they provided $13,500 to two individuals to undertake advanced study in those subjects (Numbers 2006, 320). Following the appointment of Robert Pierson as president of the Seventh-day Adventist Church in 1966, the GRI coalesced behind the orthodox views of its church leaders. With the physicist Robert Brown at the helm of the GRI, the Institute shifted focus from scientific research to apologetics—"showing that life on earth 'originated within six consecutive rotations of the planet,' that the earth 'experienced a universal destruction as portrayed in Genesis 6-8,' and that life on earth was no older 'than 10,000 years'" (p. 326). To that end, the GRI published a journal, called *Origins*, which "carried some of the most trenchant analyses of creationist claims to appear in print" (p. 327). Unlike the Missouri Synod Lutherans, who suffered through a schism as a result of their brush with liberal theology, Seventh-day Adventists remained largely "faithful to the basic vision of Ellen G. White and George McCready Price," with an astonishing 94 percent of members in 1980 professing their belief in a recent, six-literal-day special creation (pp. 327-328).

Interestingly, the GRI was unique among creationist organizations in the ideational field, in that it operated as an official arm of the Seventh-day Adventist Church. As such, the GRI wasn't principally concerned about spreading creationism to the masses. Rather, it functioned as a purveyor of religious knowledge to other Seventh-day Adventists, particularly science teachers in Adventist schools (Toumey 1994, 134). Because of its inwardly-focused educational activities, the GRI helped ensure near-unanimous support for the precepts of flood theory within Adventism as a whole.

The third major religious group to lend organized support to the creation-science movement was the Southern Baptist Convention. Besides supplying one of the principal actors of the ideational field—Henry Morris—the Southern Baptists also weighed in with a strong statement in 1982, favoring not just the idea of creation science, but also its teaching in public schools.[134] The resolution was approved during the SBC's 1982 convention, which was marked by a "wave of conservatism" and the election of a conservative president for the third time in five years, according to the SBC's *Baptist Press* newsletter.[135] Apart from the Southern Baptist

[134] The full resolution read: "WHEREAS, The theory of evolution has never been proven to be a scientific fact, and WHEREAS, Public school students are now being indoctrinated in evolution-science, and WHEREAS, Creation-science can be presented solely in terms of scientific evidence without any religious doctrines or concepts, and WHEREAS, Public school students should be taught all the scientific evidence on the subject of the origin of the world and life, and WHEREAS, Academic freedom and free speech should be encouraged rather than inhibited. Therefore, be it RESOLVED, That the Southern Baptist Convention in session in New Orleans, Louisiana, June 1982, express our support for the teaching of Scientific Creationism in our public schools." Southern Baptist Convention, "Resolution on Scientific Creationism, June 1982," http://www.sbc.net/resolutions/amResolution.asp?ID=967, accessed March 13, 2011.

[135] Anonymous, "Conservatism Sweeps SBS in Resolutions, Election," *Baptist Press*, June 17, 1982, p. 5, http://media.sbhla.org.s3.amazonaws.com/5472,17-Jun-1982.pdf, accessed March 13, 2011. Anonymous, "Correction," *Baptist Press*, June 24, 1982, p. 4, http://media.sbhla.org.s3.amazonaws.com/5474,24-Jun-1982.pdf, accessed March 13, 2011.

Convention, a number of conservative independent Baptists also played a part in the leadership of the creationism movement, and the Institute for Creation Research devoted nearly 30 percent of its outreach and ministry to Baptist congregations during the early 1980s (Toumey 1994, 56).

Finally, the last set of actors to lend support to the creation-science movement could be found in the larger American political domain. Toward the end of the 1970s, the creation-science campaign began to overlap with the goals of the nascent "Christian Right" (CR) social movement, and the two groups would find common cause as part of a larger effort to mobilize Christians in support of the Christian Right's conservative cultural agenda.[136] As Lienesch (2007, 123) argues, creationists saw an opportunity in the rise of the Christian Right, and in an effort to build linkages, they adopted the concept of "secular humanism," which was based upon a 1978 law review article. In that article, John Whitehead argued that the Supreme Court, in its Establishment Clause jurisprudence, had inadvertently created an atheistic religion of secular humanism. Because the concept could be extended to encompass a broad range of issues beyond evolution, it was ultimately co-opted by the organizations of the Christian Right; and soon creationists also began talking about their movement in broader terms, linking evolution to other issues on the CR agenda. Just as creationists had extended their orienting frame to encompass many types of creationism early in the 1970s, they now engaged in the related process of "frame bridging," by linking their issue agenda to the agendas of groups whose support they sought.[137]

According to Lienesch (2007, 215), the primary effect of the creationists' alliance with the Christian Right was to bring their message to a significantly larger American audience. But the CR alliance also proved fruitful from a resources perspective. For example, the Christian Right organization Moral Majority voiced its support on radio for a 1981 creationist bill in Oklahoma (Sonleitner 1981); it was active that same year in attempting to introduce creationism into biology textbooks (National Center for Science Education 1981b, 34); and one of its Oregon members led a failed petition drive in 1981 to get Wendell Bird's balanced treatment bill on the statewide ballot (National Center for Science Education 1981b). The creationism movement also enjoyed close ties to Moral Majority's founder, Jerry Falwell, who was a close associate of Tim LaHaye, one of the creationism movement's earliest supporters (Moore 1999a, 14; Toumey 1994, 53-54). Additionally, another national Christian Right organization—Concerned Women for America (CWA)—filed an amicus brief in the Supreme Court case of *Edwards v. Aguillard* (Larson 2003, 178). CWA was founded and operated by Beverly LaHaye, Tim LaHaye's wife.

As in any social movement composed of groups with diverse interests, however, the alliance between creationists and the Christian Right proved to be lopsided. Creationist activists benefited heavily from the "churches, academies, colleges, lobbies, rallies, broadcasts, and mailing lists" of the Christian Right, but creationism was not an issue upon which the movement was originally founded, and it was never a central issue for most factions of the Christian Right's coalition (Lienesch 1993, 16; Toumey 1994, 60; Wilcox and Larson 2006, 42). By the mid-1980s, following the two high-profile legal defeats for creation-science (discussed below), the

[136] On the history of the Christian Right and its emergence as a social movement, see Moen (1992, 1994, 1996) and Wilcox and Larson (2006).

[137] Frame bridging refers to the process by which political organizations recruit groups or individuals who share many of the same collective grievances and policy interests (Snow et al. 1986, 467-469).

Christian Right would choose to focus its energy on more winnable issues, including school prayer and abortion (Toumey 1994, 59).

Additionally, creationists secured their most prominent political ally in Ronald Reagan, who during his 1980 presidential campaign, came out in favor of teaching creationism in the public schools (Numbers 2006, 330; Oldfield 1996, 117). Responding to a reporter's question, Reagan said:

> Well, it [evolution] is a theory, it is a scientific theory only, and it has in recent years been challenged in the world of science and is not yet believed in the scientific community to be as infallible as it once was believed. But if it was going to be taught in the schools, then I think that also the biblical theory of creation, which is not a theory but the biblical story of creation, should also be taught. (quoted in Holden 1980, 1214)

Reagan's support for biblical creationism was part of a larger morality agenda that lamented the expulsion of God from the public schools and was aimed squarely at building a strong relationship with the Christian Right (Moen 1990, 203; Wood 1986, 6-7). Although it is difficult, if not impossible, to measure Reagan's influence on the creation-science policy battle, it should be noted that the largest spike of creationist legislative activity occurred at roughly the same time as Reagan's endorsement (from 1980 to 1981). At a minimum, Reagan's endorsement raised the profile of creation-science among the general public, aiding creationists in their attempt to bring more supporters under their umbrella. More generally, Reagan's support for the conservative religious agenda of the Christian Right helped elevate that agenda to a position of prominence in the Republican Party, making it increasingly acceptable for Republican candidates and elected officials to support the issues of the Christian Right and their allies (Moen 1994; Wald 2003, 210-211).

SCIENTISTS REMOBILIZE

At the same time that creationists were launching their comeback, scientists were slow to recognize the threat posed by the reinvigorated creationism movement. Beginning with the passage of California's equal-time policy in 1969 and persisting into the late 1970s, scientists let down their guard. This neglect on the part of scientists created an opening for creationists to develop the ideas, organizations, and external support necessary to keep the policy conflict alive. By 1977, however, the imbalance in the policy field would begin to change, as scientists took the first steps to organize a grassroots effort that could counter creationists' demands for equal time in the classroom. Over the next decade, creationists and their allies would engage in a full-scale policy conflict with scientists and their allies, which would lead to the rejection of the two-model policy solution in state and local policy venues throughout the country, as well as the U.S. Supreme Court. But despite their policy victories, victory in the battle of ideas would remain elusive for scientists.

Organizations

In order to explain scientists' inability to win both the policy conflict and the battle of ideas, once again we must shed light on the relationship between these two organizational fields. Scientists' reluctance to reengage the policy conflict following *Epperson* can be explained by taking a deeper look at the organizational structure of the ideational field and the motivations of practicing scientists. As in the creationist narrative, organizations played an important part in the story, but rather than serving as a resource to scientists to reengage their opponents, they instead worked to keep scientists on the sidelines for much of the early 1970s. Once engaged, however, scientists and their allies proved to be formidable opponents to creationism in several decisive policy contests. By 1987, when the U.S. Supreme Court struck down creation science, scientists would return to their sphere of influence within the university system, but outside the policy field, leaving the door open once again to another creationist comeback.

A Lot of Talk, Little Action

As discussed in Chapter 2, scientists involved in the ideational field were not lone agents but, rather, integral actors in an organizational infrastructure built around the nation's research universities and secondary schools. Within these organizations, scientists occupied the "technical core," performing mission-critical functions, including the generation of new knowledge (research) and the dissemination of that knowledge to a wider audience (teaching). In any organization, there exists a strong imperative to wall off the technical core from the outside world, protecting workers in the core from outside interference so that they can perform their jobs effectively and efficiently. Only when an organization is facing a threat to its very survival does it make sense for individuals in the technical core to venture outside their protected confines to engage with the wider world. Thus, having emerged as the "winners" in the 1960s-era policy conflict and ostensibly on track to win the battle of ideas, scientists demobilized and retreated to the technical cores of their organizations to go about business as usual.

An analysis of science journals from 1968 through 1977 reveals some of the dynamics underlying scientists' political apathy at a time when creationists were figuring out how to reinvent themselves and reengage the policy process. In November 1968, following the Supreme Court's landmark decision in *Epperson*, the ruling warranted little more than a short news item in *Science*, the premier American journal for scientific research,[138] and in the two years leading up to the case, there was little coverage of the legal controversy in any scientific journal (American Association for the Advancement of Science 1968). Only the popular-science press appears to have covered the case with any sort of regularity or in-depth examination of the underlying issues (Society for Science and the Public 1965, 1966, 1967, 1968; Tomkins 1966a, 1966b). In short, the evolution-creationism controversy and the *Epperson* decision simply didn't rise to a high level of scrutiny within the scientific profession during the late 1960s.

Beginning in 1970, we begin to see renewed interest in the topic because of the California Board of Education's 1969 two-model policy decision. Most active during this period was the journal *BioScience*, published by the American Institute for Biological Sciences (AIBS). This is not surprising, given the role that AIBS played in supporting the Biological Sciences

[138] *Science* is published by the American Association for the Advancement of Science.

Curriculum Study. Reading through the editorials, op-eds, and letters to the editor during the early 1970s, one gets a sense of both the frustration felt by some within the scientific community regarding the inability of scientists to counter creationists in the public sphere, as well as a complete lack of awareness about the larger implications of creationists' new two-model policy approach. According to the biologist John A. Moore:

> The initial reaction of the intellectual community to this creationist victory can hardly be described as vigorous. Practitioners of the social sciences and the humanities apparently concluded that the affair had nothing to do with them, a position which most have maintained to this day. The vast majority of natural scientists seemed equally unconcerned; many seemed to regard the controversy as just another example of the lunatic fringe of American life making a public display of its appalling ignorance. But a few…saw in the creationist challenge serious threats to science and education and sought to arouse the scientific and educational communities. (Moore 1974, 180)

To that end, in March 1970, AIBS Associate Director Elwood Ehrle implored his readers, "If you have some ideas on this subject, why not share them with your colleagues or with the people [involved in the California episode]. Write a letter to your newspaper or to *BioScience*. Do something! Do we have a 'silent majority' in the biological community too?" (Ehrle 1970). Erhle's comments provoked a response from several scientists, but not all of them opposed the new policy in California. A doctor from New York noted that "the ruling provides for presentation of alternative theories, a provision which is not itself objectionable." A biology teacher from Pennsylvania agreed, saying that the presentation of both theories was "not such a bad idea" because it might permit students to "learn to recognize scientific evidence of evolution and the evolutionary process and to realize the utter lack of such evidence in the other [Genesis and Aristotelian] theories." And an individual from Colorado State University had a different reaction, calling the California actions "frightening" and suggesting that part of his AIBS or AAAS dues be allocated toward fighting the decision (American Institute of Biological Sciences 1970a, 524).

These letters were followed a month later by a more forceful commentary from David Jameson, a professor and biologist at the University of Houston. Linking California's new science framework to the *Epperson* ruling, Jameson questioned the constitutionality of the new policy and argued that California's actions would have "far-reaching effects" throughout the country. Because "California buys 10% of all text [sic]," he argued, "publishers either must provide special editions or distribute the California edition throughout the nation" (Jameson 1970, 643). In the same issue, H.H. McKinney of the U.S. Department of Agriculture's Agricultural Research Service expressed frustration in a letter to the editor with the seemingly unending conflict over evolution, blaming scientists for not mounting an effective educational campaign in the public sphere. "It appears that the anti-evolution cycle will continue until scientists get their story in simple form to the people," he wrote. "As scientists, are we not devoting too much of our effort to writing reports addressed just to ourselves within the confines

of our many respective disciplines and sub-disciplines? We seem to have become locked-in, so to speak" (American Institute of Biological Sciences 1970b, 640).

Another individual from Pennsylvania questioned Ehrle's advice from a few months earlier to "do something," arguing instead for AIBS and other organizations to take a stronger advocacy role: "How about the AIBS sending to all their members in California a list of the names and addresses of all members of the Board (and perhaps others who might be in a position to influence the Board) and urge them to write those individuals? And how about the AIBS urging all their constituent societies…to present official resolutions to the Board?" A neurobiologist in California echoed these concerns, noting that "[as] far as I can see, [AIBS] has done nothing. And if AIBS has remained officially silent, how effective can the outrage by weak individual biologists be in this situation?" The scientist added, "I stand ready to cooperate in any such venture, but the initiative properly belongs with the AIBS leadership. This is one of the most important reasons for having the AIBS. If it will not function in major areas such as this one, I can see a very dim future for organized biology." Finally, a biologist from Puerto Rico piled on, suggesting that AIBS "prepare a pamphlet to be sent to each and every science teacher explaining the problem, and the objections [to the theory of special creation] which he can present…If the law will not even permit this, then the pamphlet should urge civil disobedience and mass protests" (American Institute of Biological Sciences 1970b, 640-642).

In 1970 and 1971, we begin to see the first mentions of the organized creation-science opposition in scientific journals and a dawning awareness about the potential threat. In October 1970, *BioScience* featured a news analysis of the events that transpired in California, pointing out that "a new dimension was added…*scientist versus scientist*." The article also mentioned the prominent role played by members of the Creation Research Society, cautioning "biologists who subscribe to the Darwinian continuum [to] be aware of the Creation Research Society, its objectives and operations" (Peter 1970, 1067, 1069). In response, David Jameson penned another letter to the editor, in which he cut through creationists' new science-based frame, pointing out that membership in the CRS required belief in a set of *religious* assumptions, first and foremost, "which are *not* subject to further experimentation and observation, to continued self-testing and self-correcting, or to examination." In conclusion, he wrote, "[t]heir imposition of their beliefs on my children, my students, my neighbors, and of course eventually on me calls for the firmest resistance" (Jameson 1971, 4-5).

In 1970, the National Association of Biology Teachers also waded into the California controversy, publishing an article in its journal, *The American Biology Teacher*, written by Duane Gish of the CRS. In his missive, Gish railed against "dogmatism" in science and questioned the scientific evidence supporting evolutionary theory. Additionally, he implored consideration of the two-model strategy. "What we are pleading for is a *balanced* presentation in our schools, with a full disclosure of the evidence, regardless of which theory it favors," Gish wrote. "The dogmatic fashion in which evolution is usually taught in our schools and universities amounts to indoctrination and is as much the teaching of religion as if the theory of origins were restricted to the Book of Genesis" (Gish 1970, 497). Gish's article provoked sharp responses from two prominent scientists: the Harvard biologist, Ernst Mayr, and the director of the Biological Sciences Curriculum Study, William V. Mayer. Mayr responded directly to Gish's attacks against the science behind evolution, questioning Gish's own understanding of the

evidence and arguing that he "has not brought forward a single piece of evidence that would 'falsify' the theory of evolution as now accepted by biologists" (Mayr 1971, 50). On the other hand, Mayer set Gish's commentary in the context of the larger creationism movement, noting that the CRS's latest gambit was "to attempt to equate religion and science." Rather than impart a word of caution to scientists, however, Mayer reserved his warning for creationists: "The Creation Research Society will hasten the demise of religion if it persists in the attempt to transmute religion from a matter of unquestioned faith into one of *ersatz* science" (Mayer 1971, 51).

Adding insult to injury, the first advertisements for the creationist textbook, *Biology: A Search for Order in Complexity*, began to appear in early 1971. The ad's appearance in the pages of *The American Biology Teacher* (January 1971, p. 61) caused Thomas Cleaver of the Biological Sciences Curriculum Study to pen a forceful letter to the editor, questioning the wisdom of running an ad for a textbook that was antithetical to the mission of scientists and science teachers. Cleaver wrote:

> Fairness and objectivity are indeed virtues, but passivity and naïveté in the face of an organized frontal assault are characteristics of fools….I object strenuously to our accepting such advertising indiscriminately and hope that we will speak out—where the public can hear—in support of the integrity of science and scientists and against those who seek to discredit both….We must not fail to communicate our faith, nor allow those of little faith to destroy our prerogatives. Religion belongs in the churches. Science belongs in the schools. (Cleaver 1971, 300)

The textbook would receive a thorough deconstruction the following year, with the reviewer concluding that "except for the sections on creationism and on evolution, together with certain factual errors and questionable emphases, the book is a well-organized source of information on what is traditionally called biology. Moreover, the authors have achieved a style that BSCS writers may well envy. It is interesting to read" (Aulie 1972a, 192, 1972b). The war of words between both sides would continue throughout 1971 and into 1972, with little more to show for the exchange than increased visibility for creation science and a growing sense of frustration among many within the scientific community (Gish 1971; Holt 1971, 1972; Robinson 1971; Turnage 1971; Wing 1971).

California

As discussed above, California would again find itself in the national spotlight in 1972, as state government officials undertook a process to select new science textbooks. Given the compromise science framework that was adopted in 1969, both sides of the controversy recognized the very real opportunity for creation science to gain an official foothold in the state's schools. We've discussed the actions taken by creationists in California to push for equal time, but this episode also highlights the first meaningful post-*Epperson* political involvement by scientists and their allies in a creation-science policy conflict. According to biologist John Moore, "[b]y the summer of 1972, the scientific community was finally becoming aroused. The

goings-on in California had been given wide publicity in the mass media and it was clear that the creationists were not simply going to fade away" (Moore 1974, 181). Moore's post-hoc analysis is confirmed by the writings in the nation's science journals leading up to the fall of 1972. In April, Massachusetts Institute of Technology Professor Victor F. Weiskopf decried the public assault on science, arguing that "the scientist also has an obligation to be the guardian, contributor, and advocate of scientific knowledge and insight. This great edifice of ideas must not be neglected during a time of crisis. It is a permanent human asset and important public resource" (Weisskopf 1972, 144). In June, Hampton L. Carson, a geneticist and president of the Society for the Study of Evolution, implored biologists to challenge incorrect scientific assertions.[139] "It is incumbent on the evolutionary biologist to identify and deflate all of the pseudo-science which centers in his field of endeavor," Carson wrote. "His efforts in this regard may help to blunt social and political movements based on emotions, ignorance or purposeful distortion of facts about the biology of man" (Carson 1972, 350).

In a wide-ranging commentary on the status of science in the United States, William Bevan, the publisher of the journal *Science* and an executive officer of the American Association for the Advancement of Science, explored the "crisis of confidence on the part of the public" and offered several recommendations for how to reengage with the public sphere (Bevan 1972a, 990). Bevan's remarks are worth quoting at length because they highlight the organizational and political challenges faced by scientists that were discussed in the introduction to this section. Central to his argument was the idea that "[w]hen it acquired large-scale government funding, science also inevitably acquired a political dimension" (p. 991). Consequently, scientists' "traditional elitism and its attendant self-preoccupation have meant that almost all of them have been essentially blind to the inherently political component of their enterprise" (p. 992). Scientists, Bevan argued, are ambivalent toward politics, and as a result they have not traditionally performed well when forced to engage the political domain. Additionally, the organizations in which scientists work—"the faculties, the laboratories, and, above all, the professional associations—have done little more than utter pious platitudes" (p. 993). To rectify the situation, Bevan recommended a multi-pronged approach to political engagement that centered around tighter linkages to policy makers and policy-making institutions, as well as greater visibility for scientific research among the public.[140] But purposely not on the list was "outright lobbying" (p. 993). Finally, Bevan stressed that scientific knowledge should not be hoarded but, rather, "must join the other great intellectual and ideological traditions to enrich, in the fullest sense, the lives of all citizens" (p. 996).

Although Bevan was not responding directly to the California creationism controversy, his insights describe the larger social and political milieu in which the California episode was taking place. Scientists had achieved great national prestige during the 1960s, but they were beginning to experience public backlash on a range of issues, and they were publicly wrestling

[139] Carson's comments were actually a reprint of his presidential address to the Society for the Study of Evolution in December 1971. Their publication in *BioScience* in the summer of 1972 helped spread the message to a wider audience in advance of California's textbook selection process.

[140] Specifically, Bevan (1972a, 993) called for: (1) more public forums organized by scientific professional associations; (2) more policy-relevant research; (3) greater dialogue with policy makers and appropriate involvement with policy-making institutions; (4) greater involvement with state and local governments; (5) support for scientists to pursue careers in public service; and (6) encouragement for scientists to run for office.

with how they should respond to the new challenge.[141] Within this context, the creation-science controversy touched an exposed nerve within the larger scientific community. Consequently, when the California Department of Education convened its textbook selection commission in July 1972, several scientists testified against the inclusion of creation-science in the state's biology curriculum. Among those testifying were scientists and teachers associated with the Biological Sciences Curriculum Study, the National Science Teachers Association, the National Association of Biology Teachers, and several universities (Mayer et al. 1972). Additionally, the American Association for the Advancement of Science and the National Academy of Sciences passed resolutions in October opposing the introduction of creationism into California's science textbooks (National Association of Biology Teachers 1973); and the National Association of Biology Teachers set up a preemptive "Fund for Freedom in Science Teaching" to support its advocacy activities (Nelkin 1977, 87; Wade 1972, 725).

In September, Bevan followed up his earlier article with an editorial on California's upcoming textbook conflict. Noting that the Supreme Court's 1968 decision was assumed to have ended the conflict, Bevan (1972b, 1155) argued that, in actuality, "the matter has not been settled, and recent events in California warrant the serious attention of every citizen—scientist, theologian, or otherwise." Echoing his more general comments from earlier in the year, Bevan also chided the scientific community for allowing the policy dispute to flare up again:

> [T]he Board [of Education]'s action is testimony once again that scientists have failed in their communications about science to the nonscientific public. We have taught the substance of science without communicating the approach, the methods, or the rationale of science…Creationism is a theory of primordial history and, as such, it responds to different rules of discourse…Certainly it is not a logical complement of evolution theory. (Bevan 1972b, 1155)

In November, as if following Bevan's injunction, both scientists and religious leaders showed up to voice their support for science at a hearing of the California Board of Education (Moore 1974, 182-183; Wade 1972, 725). Altogether, the marshaling of forces within the scientific community may or may not have had a persuasive effect on the Board of Education, but, at a minimum, the concerted efforts by scientists and their allies to present a united front in favor of evolution demonstrated that the scientific community was not as divided as creationists asserted (Moore 1974, 181-182). In the end, as we have seen, the Board voted to adopt a policy of "anti-dogmatism" that represented a compromise between the two sides. While scientists viewed the new policy "with relief," creationists felt "sold out" by their supporters on the Board (Nelkin 1977, 96).

[141] Etzioni and Nunn (1974) documented a significant loss of public confidence in scientific institutions during the early 1970s, compared to 1966, which coincided with a loss of confidence in other American institutions. The authors wrote, "one can conclude, tentatively, that public appreciation of scientists did decline to a degree neither trivial nor monumental, neither reassuring nor alarming" (p. 193). Specifically, they argued, "many of the defectors are among politically weaker, less-informed, less-educated groups. Nor can these groups be said to be simply disaffected; our data suggest that a person's attitudes toward science are a complex set, which can be mobilized for or against science, depending on which facet is activated" (pp. 202-203).

Although scientists and their allies successfully mobilized to thwart equal time for creation science in California, they would soon retreat back to their institutional homes. In contrast, creationists would continue building their organizational infrastructure and extending their reach across the United States. Evidence of this demobilization in the scientific community can be found in Tennessee, where we have seen how easily creationists were able to secure enactment of an equal-time law in 1973 with little organized opposition from scientists. Instead, the National Association of Biology Teachers (NABT), in conjunction with local members of their organization, challenged the measure in court after it had already become law. Although the NABT crafted a strong legal argument that led to the law's being declared unconstitutional (Le Clercq 1974), the victory in Tennessee was not a victory for organized science but, rather, a victory for scientists' allies in the legal domain. As during the 1960s, scientists emerged from Tennessee victorious because the courts looked favorably upon their cause; and even though they attained their preferred outcome, the manner in which scientists achieved victory would leave them vulnerable to creationist attacks in other states. Moreover, the NABT's maneuverings in California and Tennessee provoked a backlash by the organization's members, who questioned the wisdom of the NABT's legal advocacy (Nelkin 1977, 92-94). Instead of organizing themselves to contest the growing policy conflict, scientists would continue to fight the battle of ideas on the pages of the nation's scientific journals, falling back on the courts as a policy strategy, when necessary.[142] In short, despite emerging as the winners from the 1960s policy conflict, scientists fell into a reactive mode throughout the 1970s, responding the best they could to policy flare-ups across the country, but lacking a coordinated national strategy to consolidate their earlier policy victories and to defeat their opponents in both the public sphere and the ideational field.

Fifty-State Mobilization

That situation would change in 1977, when Stanley Weinberg, a retired biology teacher, began organizing a grassroots effort that would become known as the Committees of Correspondence (CoCs) to counter creationists in Iowa and, later, throughout the country. In his study of the CoCs, Hee-Joo Park summarized the state of play during the late 1970s:

> [E]volution defenders began to realize an essential component was missing in their efforts to counter creationist campaigns. They found the strength of the creationist movement to lie in the many small groups of dedicated believers that existed in local communities in Iowa and all over the country. These creationist activists went to public meetings and lobbied legislators. To address the creationist challenge at this grassroots level, evolution defenders realized they also needed to organize themselves at the same level. (Park 2000, 352)

[142] It is not necessary to detail all of the relevant articles, commentaries, and letters to the editor that were published after 1972 because most of the arguments were in line with those recounted above. For a sampling of scientists' opinions from 1973 to 1974, see Lucas et al. (1973), Gish (1973), Cory (1973), Wenner (1973), Strickberger (1973), Moore and Gish (1974), Mayer (1974).

Weinberg possessed all the right qualifications to challenge the rekindled creationism movement. As the author of a biology textbook, Weinberg had participated firsthand in the Texas textbook adoption process and, as a result, was well acquainted with the ideas and the resources that creationists were able to bring to bear in support of their cause (Weinberg 1978).

Weinberg's policy activism was spurred by the introduction of a creation-science bill in the Iowa House of Representatives, which declared, "If a public school district offers courses which teach pupils about the origin of humankind and which include scientific theories relating to the origin, instruction shall also include consideration of the creation theory as supported by modern science."[143] Although the legislation did not move beyond committee, its introduction set off a flurry of activity in the state. Creationists lobbied legislators to approve the bill, and Duane Gish of the Institute for Creation Research visited the state to speak on behalf of it. At the same time, the state Department of Public Instruction initiated a study on the status of creationism in other states. Although the report did not recommend whether or not creationism should be taught in public schools, it did recognize evolution as a valid scientific theory (Weinberg 1980).[144]

Then, in 1979, a second creation-science bill was introduced in the Iowa Senate and referred to the Senate Education Committee. During a committee hearing on the bill, a diverse group of individuals from both sides was invited to provide testimony; notably, Stanley Weinberg, who spoke against the bill, and Richard Bliss of the Institute for Creation Research, who spoke in favor. Additionally, the legislation prompted the Iowa Academy of Science to adopt a resolution, which was distributed to senators on the day of the hearing. In its statement, the Academy objected to language in the bill that would have equated "scientific creationism" and evolution as scientific theories, and it argued further that "'creationism' is not science but religious metaphor clothed as scientific fact" (quoted in Weinberg 1980, 3). Following the hearing, the legislation was referred to another committee, which elected to defer the bill until the next legislative session. In his reflection on this policy episode, Weinberg attributed the failure of the bill to several factors:

> the required expense, the substantial discussions in the newspaper and elsewhere…[t]he *Register*'s editorial position, Governor Ray's stand, DPI's principled but even-handed position paper, the intercession of the Academy of Science, and the steadfastness of a group of senators committed against the bill. Especially important was the involvement of a large number of evolutionary scientists, both in generating pro-evolution publicity and in speaking at the Senate hearing and other meetings. (Weinberg 1980, 3)

Although a third bill was introduced during the following session, no creation-science legislation was subsequently passed by the Iowa Legislature.[145] Policy events such as this one would become common in states throughout the nation over the next few years, but what makes

[143] Iowa House File No. 154, introduced February 9, 1977 by Representative Horace Daggett (Wilhelm 1978, 453).
[144] As Weinberg (1980, 2) notes, the state of Iowa lacked formal authority to compel schools not to teach creationism. Such curriculum decisions were delegated to local school districts.
[145] The events in Iowa are also recounted in Gerlovich et al. (1980).

Iowa such an interesting case is its consequences for the pro-evolution side of both the national policy conflict and the underlying battle of ideas.

Applying lessons learned in Iowa, Weinberg outlined a two-pronged strategy for scientists and their allies to counter creationists effectively: (1) devote more resources to public education, in an effort to convince a larger share of the public of the veracity of evolution; and (2) commit to greater political engagement with the policy process (Weinberg 1978, 1980). On the education side, Weinberg argued that pro-evolution statements by national science organizations were "largely a waste," because local communities don't like being told what to do by outsiders. Instead, he argued, local scientists needed to get more engaged in their communities "through a persistent, low-key program of writing letters and articles in the papers, appearing on talk shows, addressing local groups, submitting to interviews, and the like" (Weinberg 1980, 6). On the political side, Weinberg stressed that supporters of evolution needed to learn from creationists by adopting local and statewide political advocacy strategies. "Whenever creationists appear before a legislative committee, or a local Board of Education, or a textbook adoption committee," he argued, " if two or three evolutionary biologists also appeared, the creationists would not carry the day as they now so often do. This is the kind of political action that is called for…It is the general public, and its representatives in educational governing bodies, that must be reached—and that *can* be reached, given the necessary effort" (Weinberg 1978, 545).

To that end, Weinberg and Wayne Moyer, executive director of the National Association of Biology Teachers, proposed the creation of a grassroots network called the Committees of Correspondence. The idea was articulated to the broader scientific community in a *BioScience* editorial (Moyer 1980), but it received a lukewarm reaction (Park 2000, 355). Consequently, the NABT Board of Directors established its own Evolution Education Committee, installing William V. Mayer, the former executive director of the Biological Sciences Curriculum Study, as chair. The problem with this new group, according to Weinberg, was that it only focused on education, to the exclusion of political action (and it didn't help matters that Weinberg and Mayer did not get along with each other) (pp. 355-356). As a result of their disagreement, Weinberg split from the NABT in 1980 and established the Committees of Correspondence independently (p. 357). Within a short time, the new organization was up and running. After only a couple of years, 45 states had formed affiliated chapters, and by 1986, all 50 states plus five Canadian provinces housed a CoC (p. 360). The activities of the Committees were just as Weinberg had envisioned. Local members monitored creationist activities, helped educate public officials and teachers, wrote articles for local newspapers, and performed outreach to the community. Although the organizations were spread throughout the nation, the level of activity varied from state to state, with California, Georgia, Illinois, Iowa, Minnesota, New York, and Texas among the most active (pp. 360-363).

Not everyone in the scientific community praised the utility of the CoCs. In particular, William Mayer noted that "[t]hey were of no help in the California trial, Arkansas trial, or the trial of Lloyd Dale in Lemmon, South Dakota, nor have I personally seen examples of their effectiveness" (quoted in Park 2000, 363). But Mayer seems to have missed the point of the CoCs, which were not organized to contest creationists in the legal domain but, rather, in the state and local policy fields (i.e., in state legislatures, state departments of education, and school

boards). To that end, Weinberg claimed that the CoCs helped defeat bills in "about 20 states" (Weinberg 1982),[146] and according to Park (2000, 363) the American Association for the Advancement of Science recognized the important role played by the CoCs throughout the 1980s, by awarding the Scientific Freedom and Responsibility Award to Weinberg in 1987 for local-level advocacy. Additionally, Henry Morris himself acknowledged the role played by the CoCs in doing "battle for evolutionism whenever creationism appears in any kind of organized, local effort" (Morris 1993 [1984], 376).

Also emerging at around the same time as the Committees of Correspondence was a new publication devoted to the evolution-creationism controversy. Co-founded by Frederick Edwords, an administrator with the American Humanist Association, *Creation/Evolution* aimed to be a source of information on the modern theory of evolution and a resource to those fighting against creationism. In their inaugural issue, the editors elaborated on their vision:

> [F]or all this time those opposing the reintroduction of Biblical fundamentalism into public education have fought the battle alone without any research support behind them. Each one had to start at the beginning with his research and preparation. Each had to learn the hard way the debate and instructional tactics of contemporary creationists.
>
> This explains why it is that creationists today can often run circles around the people they debate. They are organized, their opposition is not. They work together and pool persuasive sounding arguments. Often the people they debate are academics expert in a narrow specialty but ill prepared for the barrage of issues thrown at them…In the end sound science, poorly articulated, loses out to well-packaged pseudo-science…
>
> But there is a solution…Evolutionists can work together and pool their efforts just as creationists do…There is now a network of contributors, advisors, and debaters from around the country expressing themselves in this journal.
>
> We hope you'll join us. (*Creation/Evolution,* Vol. 1, Number 1)

In other words, Edwords and his colleagues were making a plea for scientists to help create a bridge between the ideational field (where knowledge about the theory of evolution resides) and the policy field (where creationists were "running circles" around their opponents).

In 1983, the Committees of Correspondence were incorporated as the National Center for Science Education (NCSE), *Creation/Evolution* was brought under NCSE's institutional umbrella, and Weinberg agreed to serve as the group's first president. But around the same time, many of the policy battles began to die down after balanced-treatment legislation in Arkansas

[146] Despite his boasts about the reach of the Committees of Correspondence, Weinberg does admit the CoCs were unable to stop Arkansas and Louisiana from enacting balanced-treatment legislation into law (Weinberg 1982).

was overturned by a U.S. district court (McLean v. Arkansas Board of Education 1982 529 F. Supp. 1255; Moore 1999b). The Committees thus became a victim of their own success, and the new leadership of the NCSE decided that the only lasting solution to the conflict was to change people's minds. As a result, the NCSE board voted to pursue a more proactive approach to promote evolution through education, rather than focusing solely on countering creationism (Park 2000, 364).[147]

External Support

By the early 1980s, the policy battle was fully engaged by organizations representing creationists, scientists, and their political allies on both sides of the divide. Few creationist policy initiatives were successful, but even in defeat, creationists learned from their failures for future rounds of contestation. Unfortunately for creationists, in states where they did enjoy policy victories, they would continually find their gains reversed by the courts. Two states, in particular, provided the knockout blows to creation science, but only because scientists received substantial support from a group of old allies: the church-state separationists.

Arkansas

As discussed above, during the late 1970s, Paul Ellwanger of Citizens for Fairness in Education modified the Institute of Creation Research's "model" balanced-treatment resolution for use by state legislatures, and Ellwanger took it upon himself to send the draft bill to his contacts around the country. Among those who received a copy of the bill was the Reverend W.A. Blount, chairman of the Greater Little Rock Evangelical Fellowship in Arkansas (Moore 1999b, 93). Blount, in turn, gave the bill to state Senator James Holsted, a member of his congregation, who introduced the measure in the state legislature in 1981 (p. 93). On March 13, the Arkansas Senate passed the "Balanced Treatment for Creation-Science and Evolution-Science Act" by a vote of 20 to 2 (p. 94). The bill then went to the House, where two Christian Right organizations—Moral Majority and Family Life America Under God (FLAG)—sent local representatives to lobby in support of the bill (Lewin 1982d, 486-487). Four days after the Senate approved the measure, the House of Representatives followed suit by a vote of 69 to 18. On March 19, less than a week after its initial consideration in the Senate, the bill was signed into law by Republican Governor Frank White, despite his never having read the measure (Moore 1999b, 94). Unlike other states where the Committees of Correspondence and scientists were able to mount a strong defense of evolution, the legislative process moved so quickly in Arkansas that there was never an opportunity for scientists to formally register their opposition (p. 94). Reverend Blount later wrote to Ellwanger, "The idea swept through the Legislature and to the Governor's desk, and as I watched the progress I said simply to myself and others, 'This is an idea whose time has come'" (quoted in Larson 2003, 150-151).

Two months later, an old ally of the pro-evolution cause—the American Civil Liberties Union (ACLU)—filed suit in U.S. District Court on behalf of 23 Arkansas citizens and organizations, including the American Jewish Congress, the National Association of Biology

[147] See the concluding chapter for further thoughts about scientists' ongoing strategies to counter creationism.

Teachers, and a group of liberal clergy (Lienesch 2007, 211-212; Moore 1999b, 94).[148] According to Larson (2003, 159), the ACLU left little to chance in the trial, inviting a wide range of scientists, religious leaders, and other academic scholars to testify, and assigning twelve national and local lawyers to represent the pro-evolution side.[149] The ACLU's plan of attack was to undermine the scientific basis of creation science, in order to demonstrate that the law failed the Supreme Court's religious purpose test and was therefore unconstitutional (p. 159). Dividing its witnesses into two teams, the religious team argued that creation science was not science, but religious apologetics; and the scientific team argued that creation science lacked sufficient evidence to be taken seriously as a science (p. 161).[150]

At one point, Wendell Bird attempted to intervene in the case on behalf of four creationist organizations, but the court denied his request (Larson 2003, 159-160). That left state Attorney General Steve Clark in the position of having to defend the law alone, hewing closely to the legal argument constructed by Bird (1978) in his earlier *Yale Law Journal* article. But Clark faced enormous difficulty finding witnesses who could testify to the scientific worthiness of creation science without being discredited for their religious assumptions (p. 162). Most notable for his absence as a witness during the trial was Henry Morris and his team at the ICR, who "were out of the question because they readily admitted a religious purpose and effect for their scientific activities, and that was just what the statute could not have" (p. 162). Instead, Clark relied upon seven creation scientists, whose testimony and scientific credentials were systematically dismantled by the ACLU attorneys under cross-examination (Cracraft 1982; Lewin 1982b).

On January 5, 1982, the trial judge, William Overton, ruled that the Arkansas law violated the First Amendment of the U.S. Constitution because it had a religious purpose and a clear sectarian effect (Larson 2003, 163; Lewin 1982c; Raloff 1982b). In his extensive written opinion, Judge Overton traced the history of the Balanced Treatment law, examined the underlying motivations of those who advocated for its passage, and proffered a definition of "science" that could be used to evaluate the scientific merits of creation science. Because Overton's opinion sheds light on the relationship between the creation-science policy conflict and the long-standing battle of ideas, it is worth examining in detail.[151] Overton began by setting the legal conflict in historical context, linking the anti-evolution movement of the early 1900s to "fundamentalism." By the 1960s, he wrote, fundamentalists started getting active, fearing "the loss of traditional values" and "growing secularism in society." Against this backdrop, "several Fundamentalist organizations were formed to promote the idea that the Book of Genesis was supported by scientific data." The principal organizations, as we have seen, were the Institute for

[148] Individual plaintiffs included: the resident Arkansas Bishops of the United Methodist, Episcopal, Roman Catholic, and African Methodist Episcopal Churches, the principal official of the Presbyterian churches in Arkansas, other United Methodist, Southern Baptist, and Presbyterian clergy, and several parents and "next friends" of Arkansas students. Organizational plaintiffs included: the American Jewish Congress, the Union of American Hebrew Congregations, the American Jewish Committee, the National Association of Biology Teachers, and the National Coalition for Public Education and Religious Liberty (McLean v. Arkansas Board of Education 1982 529 F. Supp. 1255)

[149] Many of the ACLU lawyers volunteered their services to the case on a *pro bono* basis, which gave the plaintiffs a huge resource advantage over their opponents (Kerr 1982).

[150] For more detailed coverage of the trial, see Lewin (1981, 1982a, 1982b) and Raloff (1982a).

[151] The following analysis and quotations are drawn directly from Judge Overton's written opinion. See *McLean v. Arkansas Board of Education* 1982 529 F. Supp. 1255.

Creation Research, Creation Research Society, and Creation-Science Research Center. Interestingly, Overton's discussion of modern fundamentalism recognized the central role of knowledge in the dispute, noting that "[t]here is an emphasis among current Fundamentalists on the literal interpretation of the Bible and the Book of Genesis as the sole source of knowledge about origins." This connection between religion and creationist knowledge concerning human origins proved central to his legal reasoning.

Because the law was originally drafted and disseminated by Paul Ellwanger, Overton focused a lot of attention on Ellwanger's motivations, coming to the conclusion that "Ellwanger's correspondence on the subject shows an awareness that Act 590 is a religious crusade, coupled with a desire to conceal this fact." Moreover, Overton found that the individuals who helped Ellwanger get the bill into the hands of the state legislature were motivated by "their religious convictions"; and Senator Holsted, the bill's sponsor, was "motivated solely by his religious beliefs and desire to see the Biblical version of creation taught in the public schools." In other words, despite the efforts made by these and other creationists to frame the bill in terms of "creation science," Judge Overton was able to conclude, through examination of the non-legislative, historical record, that the bill's "statement of purposes has little, if any, support in fact" and, therefore, "the Act was passed with the specific purpose by the General Assembly of advancing religion." Consequently, the law was found to run afoul of the U.S. Supreme Court's religious purpose test. Judge Overton's analysis is important because it sheds light on the underlying ideational field. Although the creationist organizations of the ideational field were instrumental in rekindling the political conflict in state legislatures and school boards, these organizations would also prove to be the movement's downfall in the court system, because they had accumulated too much of a record linking creation science to its underlying source of *religious* authority.

But Judge Overton didn't stop there. Drawing on testimony from scientists at the trial, he then proceeded to define "science" as having five essential characteristics: "(1) It is guided by natural law; (2) It has to be explanatory by reference to natural law; (3) It is testable against the empirical world; (4) Its conclusions are tentative, i.e., are not necessarily the final word; and (5) It is falsifiable." With a definition in hand, he then reasoned that creation science was not, in fact, "science," and he proceeded to dismantle the defendants' "scientific" testimony to stress the point. "Since creation science is not science," he argued, "the conclusion is inescapable that the *only* real effect of Act 590 is the advancement of religion." Consequently, he concluded, the law also failed the second prong of Supreme Court's religious purpose test (because the *primary* effect of the law was the advancement of religion). Finally, because the law would require government to continually monitor textbooks, course material, and classroom discussions for "impermissible religious references," Overton declared that the law failed the third prong of the Supreme Court's religious purpose test (against excessive government entanglement).

In closing, Judge Overton addressed another crucial dimension of the conflict—the role of public opinion. Acknowledging that the American public seemed to support allowing public schools to teach both the theory of evolution and creation science, Overton stressed that public opinion should not overrule the Constitution in a case like this. He wrote:

> The application and content of First Amendment principles are not determined by public opinion polls or by a majority vote. Whether the proponents of Act 590 constitute the majority is quite irrelevant under a constitutional system of government. No group, no matter how large or small, may use the organs of government, of which public schools are the most conspicuous and influential, to foist its religious beliefs on others.

Thus, after decades of ideational and organizational development to convince the American public and policy makers to support their cause, creationists would find themselves alienated from the policy process by a court system unwilling to interpret the Constitution in terms favorable to creation science. Additionally, scientists would find themselves once again on the winning side of a major court case because of their alliance with the ACLU. In the writings of one scientist after the verdict was announced, "[I]t is important that scientists, and others opposed to creationism, support—financially—their local (and national) ACLU chapter. This is the surest way to guarantee that pressure will be placed on public officials, none of whom will want to face an expensive law suit [sic] he cannot possibly win" (Cracraft 1982, 89).

Following Judge Overton's verdict, Arkansas Attorney General Clark declined to appeal the case. Citing the "religious overtures" of the law as an "insurmountable problem," Clark pledged that "[t]here will be a better time on this issue…[to draft a bill] that does meet constitutional standards" (Smith 1982). Consequently, Overton's ruling would only apply to the state of Arkansas, and a nationwide constitutional ban on creation science would have to wait for another opportunity to come along.

Louisiana

As it turned out, Arkansas did not pass another balanced-treatment bill, but it wasn't long before another state found itself at the center of the creation-science controversy. In 1981, Louisiana state Senator Bill Keith introduced Paul Ellwanger's model bill on the first day of the new legislative session (Larson 2003, 153).[152] The bill was referred to the Senate Education Committee, which held hearings and amended the bill to allow balanced treatment of both evolution and scientific creationism at the *discretion* of local districts. Importantly, the committee also stripped out Ellwanger's legislative findings of facts. Given this and other compromise changes to the bill, it was quickly passed by both the committee and the full Senate will little legislative opposition (p. 153). In the House of Representatives, the Education Committee held a hearing on the legislation and amended the Senate version to restore the balanced treatment *mandate*, while leaving the other amendments alone. The committee also adopted new amendments "to require teaching both evolution and creation as unproven theories and to prohibit public schools and universities from discriminating against creationist teachers" (p. 154). Over the vocal objections of scientists and liberal religious leaders, the House passed the committee substitute intact on July 6, by a vote of 71 to 19. The bill then went back to the Senate, where it was adopted without any changes, by a vote of 26 to 12 (p. 154). Despite having

[152] Keith had attempted to pass his own creation-science bill in 1980, but it died in committee. After hearing of his struggles, Ellwanger sent Keith a copy of his model bill and other material that stressed the scientific nature of creation science, rather than its religious aspects (Larson 2003, 153).

doubts about the bill, Governor David C. Treen signed the "Balanced Treatment for Creation-Science and Evolution-Science in Public School Instruction Act" into law two weeks later (Broad 1981, 629; Larson 2003, 155).

In December 1981, with the support of the newly-established Creation Science Legal Defense Fund,[153] Wendell Bird of the Institute for Creation Research filed suit in a Baton Rouge federal district court on behalf of the bill's sponsor, Senator Keith, requesting that the state be compelled to implement the new law (Larson 2003, 166; O'Connor and Ivers 1988, 13).[154] In response, the ACLU filed its own lawsuit in a New Orleans federal district court, requesting that the law be declared unconstitutional. That case, *Aguillard v. Treen*, included 26 separate plaintiffs, including Louisiana educator Donald Aguillard, the National Association of Biology Teachers, the National Science Teachers Association, and the American Association for the Advancement of Science (Larson 2003, 166-167). Initially, the *Aguillard* court deferred action pending the results from the *Keith* trial. But the *Keith* court dismissed the case in June 1982, punting it to the state courts for resolution. When that happened, the proceedings before the *Aguillard* court sprang to life again. In November 1982, Judge Adrian Duplantier overturned the law, arguing that the legislature had usurped the authority of the state Board of Education by prescribing *how* the law should be implemented. Nowhere in his opinion did the judge refer to the constitutional issues at stake (Larson 2003, 168). In victory, ACLU attorney Jack Novik was ebullient: "We have defeated the creationists at the federal level by showing that so-called creation science is just religion in disguise. And we have defeated them at the state level by showing that a legislature cannot mandate detailed curricula. They will find it very difficult to come back after this" (quoted in Lewin 1982e, 1099).

But creationists were undeterred. On appeal, the case was referred to the Louisiana Supreme Court for a decision on the scope of the legislature's authority in the state of Louisiana. In 1983, the Louisiana Supreme Court overturned the district court's ruling concerning the authority of the legislature, but it explicitly noted that its decision did not involve any substantive aspect of the claims pertaining to evolution and creation science (Larson 2003, 168; Lewin 1983). Amid all the legal wrangling, other political developments threatened to make the case moot. On May 24, 1984, the Louisiana Senate voted 21 to 16 to repeal the balanced-treatment law. According to a news account, the "potential financial burden and the governor's desire to entice biotechnology companies into the state [were] said to be influencing lawmakers' decisions" (Lewin 1984a). On June 26, however, the House dashed the hopes of scientists and their supporters by killing the Senate's repeal on a 41 to 26 vote (Lewin 1984b).

The legal case then returned to federal district court, and on January 10, 1985, Judge Duplantier issued a pre-trial judgment, voiding the statute on grounds that it violated the Establishment Clause of the U.S. Constitution. Duplantier wrote, "Because [the law] promotes the beliefs of some theistic sects to the detriment of others, the statute violates the fundamental First Amendment principle…that a state must be neutral in its treatment of religions" (Lewin

[153] According to Henry Morris (1993 [1984], 335), the Creation Science Legal Defense Fund was created as a counter to the ACLU "primarily to finance and provide a good legal defense whenever a creationist law or teacher is attacked in the courts." Wendell Bird and John Whitehead were the two principal attorneys for the group and led the state of Louisiana's defense of the Balanced Treatment Act (pp. 338-339).

[154] The law was not scheduled to be implemented until the fall of 1983.

1985). After protracted consideration by the Fifth U.S. Circuit Court of Appeals (Larson 2003, 170-174), Judge Duplantier's decision was affirmed by a three-judge panel, and by an 8 to 7 vote, the full court denied Bird's request to reexamine the decision of the panel (Lewin 1986).

In May 1986, the U.S. Supreme Court agreed to hear the case, and oral arguments were scheduled for later that year (Norman 1986a). In the lead-up to their appearance before the high court, scientists rallied their ranks against the Louisiana balanced-treatment law. Most notable was an amicus curiae brief submitted by 72 Nobel Laureates of science, which made the case that creation science was not science, but religion in disguise (Norman 1986b).[155] But, as before, organized science was not the driving force behind the policy contestation. That job would fall, once again, to scientists' church-state separationist allies in the ACLU and other national organizations. On December 10, the Supreme Court heard one hour of oral arguments, and on June 19, 1987, the Court issued its ruling that the Balanced Treatment Act was unconstitutional (Lewin 1987; Norman 1987). Justices Brennan, Marshall, Blackmun, Powell, and Stevens constituted the majority opinion that the law violated the Establishment Clause, and they were joined in all but one part of the opinion by Justice O'Connor. Justices Powell and White wrote concurring opinions, with Powell arguing that the Louisiana law was directly influenced by the ideas of the Institute for Creation Research and the Creation Research Society.[156] Finally, Justices Scalia and Rehnquist dissented, noting that the case should have been punted back to the lower courts for trial (*Edwards v. Aguillard*, 482 U.S. 578; Larson 2003, 179-181).

In their majority opinion, the justices concluded that the Balanced Treatment Act failed all three prongs of their religious-purpose test and was therefore in violation of the Establishment Clause. The Supreme Court rested much of its argument on the historical and organizational context that gave birth to the Louisiana law. Citing a historical analogue to the 1968 case of *Epperson v. Arkansas*, the Court argued that the legislative history of the law revealed a clear religious purpose:

> These same historic and contemporaneous antagonisms between the teachings of certain religious denominations and the teaching of evolution are present in this case. The preeminent purpose of the Louisiana Legislature was clearly to advance the religious viewpoint that a supernatural being created humankind. The term "creation science" was defined as embracing this particular religious doctrine by those responsible for the passage of the Creationism Act. Senator Keith's leading expert on creation science, Edward Boudreaux, testified at the legislative hearings that the theory of creation science included belief in the existence of a supernatural creator. Senator Keith also cited testimony from

[155] Other amici curiae briefs opposing the balanced-treatment law were submitted on behalf of the American Association of University Professors; the American Federation of Teachers, AFL-CIO; the American Jewish Congress; Americans United for Separation of Church and State; the Anti-Defamation League of B'nai B'rith; the National Academy of Sciences; the New York Committee for Public Education and Religious Liberty; People for the American Way; and the Spartacist League. For the defense, amici curiae briefs were submitted on behalf of the Catholic League for Religious and Civil Rights, the Christian Legal Society, and Concerned Women for America (*Edwards v. Aguillard* 482 U.S. 578).

[156] Powell was joined in his concurring opinion by Justice O'Connor.

> other experts to support the creation-science view that "a creator [was] responsible for the universe and everything in it." (*Edwards v. Aguillard* 482 U.S. 578)

As in the McLean case, the battle of ideas would prove to be a double-edged sword, enabling doubt to be cast on the "science" in creation science. No matter how much they tried to strip out any mention of religion from the Louisiana bill, they still ran asunder of the courts because the legislative and historical record clearly documented the underlying religious intent of the law. Thus, with the Supreme Court's ruling, the creation-science era of the evolution-creationism conflict would come to an abrupt end.

Once again, creationists were dealt a serious blow to their cause. But it wouldn't take long before they would find a way to reinvent themselves and relaunch their movement—this time under the banner of "intelligent design." In the next, concluding chapter, I provide a brief sketch of the new round of policy contestation, which provides further evidence concerning the influence of the ideational field on the long-term policy conflict. Before turning to that discussion, however, it is helpful to revisit the framework established in Chapter 2 to set the preceding empirical chapters in a more theoretical context.

CHAPTER 6: CONCLUSION

> While, as biologists and educators, we have great cause for rejoicing over the recent US Supreme Court decision in the Louisiana "equal treatment for 'creation science'" case, we must, nevertheless, be very careful. I am concerned that much of the scientific community will now treat the creation-evolution issue in the same way the issue was treated immediately following the Scopes trial in 1925. That is, the issue will be ignored… Professional biologists and educators need to continue to be very active in the creation-evolution fight if the Supreme Court decision is to have a lasting, positive effect…Let us learn from the mistakes after the Scopes victory: another such "victory" might mark the end of meaningful evolution education in public schools.
>
> —Michael Zimmerman (1987),
> Ohio Center for Science Education

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The findings of this dissertation provide an explanation for the seemingly unending policy conflict over the teaching of evolution in public schools, as well as a few plausible scenarios for how the conflict might someday come to an end. As demonstrated in the preceding chapters, the entire creation-science era of policy conflict is surprising when viewed through the lens of theories of policy sustainability. During the 1960s, the policy status quo began to change permanently in favor of scientists and their allies, allowing the teaching of evolution in public schools to spread throughout the United States. Additionally, the U.S. Supreme Court's 1968 ruling in *Epperson v. Arkansas* overturned one of the last remaining state prohibitions against the teaching of evolution, robbing creationists of their principal policy solution. These changes alone should have brought an end to the policy conflict, but they did not. Why were creationists able to bounce back, and why were scientists unable to consolidate their policy victories to put their opponents out of business?

In answer to the central questions of this dissertation, creationists were able to bounce back from defeat by engaging in the practice of "field bridging"—tapping into the non-political organizational resources from a separate, though interconnected, field of conflict: the battle of ideas. The battle of ideas was set in motion by Charles Darwin's *On the Origin of Species*, which revolutionized scientists' understanding of species development. When Darwin's theory of evolution by natural selection was extended to encompass human development, there ensued a conflict between scientists and religious elites, which produced a rift within Protestant Christianity itself. The battle of ideas spilled over into the policy field during the 1920s because of one man: William Jennings Bryan. By bridging the fields of policy and religion, Bryan helped launch the first round of policy conflict over the teaching of evolution in public schools. After a few state victories and many more defeats, the anti-evolution policy conflict went dormant for a number of years, but the battle of ideas was kept alive by several determined individuals, who developed an institutional infrastructure devoted to the scientific study of creationism.

Thus, when creationists emerged from the 1960s as the losers in the policy conflict—faced with seemingly insurmountable institutional barriers—they were able to draw upon the creationist organizations in the ideational field to rekindle their political movement. While creationists were rebuilding their political movement, scientists let down their guard. This was due to the fact that no single scientific organization emerged from the 1960s with the mandate to consolidate the pro-evolution alliance's policy victories. The church-state separationists, who were essential to the Supreme Court victory, did not have a vested interest in the teaching of evolution; their main concern was keeping religion out of the classrooms. Although scientists and science educators did have a vested interest in the policy outcome, they were not in a position of strength organizationally to consolidate the policy gains they had made. Only after the Committees of Correspondence were formed during the late 1970s did scientists begin to make headway in countering creationists on a state-by-state basis. But once again, it would take the intervention of their church-state separationist allies to finally put the matter to rest in the judicial arena.

In the remainder of this chapter, I discuss the theoretical implications of this empirical analysis, with special attention to the key factors that facilitated the perpetuation of conflict through 1987. With these factors in mind, I then provide a brief overview of the circumstances underlying the post-1987 creationist revival under the banner of "intelligent design," and I present public opinion data to demonstrate the fleeting nature of the "victory" for scientists. Next, I discuss a few theory-informed mechanisms by which the policy conflict might someday come to a decisive end. Finally, I conclude with directions for future research and final thoughts about the relevance of this dissertation to the study of American politics.

THEORETICAL IMPLICATIONS

At the heart of this study are two theoretical constructs: the phenomenon of "contested policy change," which helps situate the case at hand in relation to other cases of policy change and conflict, and the concept of "field bridging," the principal mechanism by which creationists have been able to perpetuate their policy conflict, even in the face of overwhelming policy barriers. Additionally, this study highlights the critical role played by non-political organizations, which acted as both *instigators* of conflict in two organizational fields and *incubators* of the ideas and leaders that would help perpetuate the conflict over time. Too often in political science, non-political organizations are underappreciated because political scientists lack adequate theoretical tools to explain their engagement in the policy process. This dissertation is a step toward rectifying that situation, by placing organizations front and center in the analysis and using the tools of organization theory to help explain their ongoing involvement in the long-running conflict over evolution.

Although the evolution-creationism conflict may seem like a unique case relative to other issues in American politics, this study has shown that it is representative of a larger class of cases, in which significant policy change occurs over time but the "winners" in the policy dispute are unable to consolidate their gains to end the dispute decisively. I call this phenomenon "contested policy change" to highlight the ability of the "losers" in the dispute to continue contesting the conflict, even as significant policy changes continue to occur around them. The existence of this phenomenon is puzzling for two reasons. First, theory predicts that sustainable

policy change should make collective action increasingly difficult for losing organizations as they suffer more and more institutional disadvantages stemming from the original policy enactment. Second, theory also predicts that the enduring presence of strong winning organizations is essential to the sustainability of general interest reforms.

In the case at hand, the losing creationist organizations were able to remobilize and actually strengthen the organizational dimension of their movement after the major policy defeats they suffered during the 1960s. Additionally, the policy changes that were set in motion during the 1960s (i.e., the publication of BSCS textbooks and their imitators, the adoption of such textbooks in school districts throughout the nation, and increased teaching of evolution in public school classrooms), actually grew stronger over time—despite the demobilization of scientists and the remobilization of creationists during the 1970s.

How can theory account for these puzzling outcomes? I argue that two modifications to our existing theories of policy sustainability are in order. First, scholars need to be cognizant of the sometimes critical role played by non-political organizations in the policy process, bringing non-political organizations into the analysis to help explain political outcomes when collective action theory breaks down. Second, by expanding the actors to encompass all types of individuals and organizations, scholars need to be attentive to the distinct organizational fields to which these actors belong, specifying the mechanisms by which material and non-material resources drawn from different organizational fields are able to influence conflicts in the policy field.

Both of these theoretical challenges can be handled by the concept of field bridging. Field bridging is an alternative way of conceptualizing the policy process, its relationship to society at large, and the linkages that exist between individual and organizational actors engaged in specific policy conflicts. Field bridging assumes, first, that a wide variety of political and non-political organizations can be participants in the policy process at different times and, second, that these diverse actors are embedded in multiple organizational fields. Each field, in turn, is characterized by a distinct organizing logic and a reservoir of organizational resources. Because individuals and organizations occupy positions in multiple fields, they are in a position to act as agents of change, manipulating resources from one field to achieve their goals in another.

This study uncovered three mechanisms by which field bridging can occur. First, actors in the policy field can draw new ideas or repurpose old ideas from organizations operating outside the policy field. In the case at hand, creationists successfully transformed the frame of "scientific creationism"—which originated in the ideational field—into a set of political ideas that could appeal to both policy makers and the public. Second, actors in the policy field can draw material and non-material resources from other organizational fields to assure their survival when times get tough. In the case at hand, creationists were able to remain alive following the 1960s because of the organizational infrastructure that had been built by George McCready Price, Henry Morris, and their colleagues during the preceding decades. These organizations, which were initially formed to fight the battle of ideas, were the key factor that enabled creationists to keep from going out of business during the 1970s. Finally, field bridging enables the cultivation of a wide array of external supporters, which can provide both permissive and direct support to actors in the policy field. In this study, creationists actively recruited new

leaders, allies, and supporters from the general public to advance their cause. In particular, the public support they generated and their alliance with the Christian Right were both critical factors in garnering the attention of policy makers throughout the nation. Additionally, the connections between creationists and the numerous conservative religious organizations throughout the United States helped maintain a strong base of public support over time from among the nation's conservative Protestant population.

Field bridging is also a useful theoretical concept to explain policy change at the state and local level. Political scientists often focus their research on national policy making, an arena in which political interest organizations are the primary combatants, and the institutions of government are relatively few (i.e., Congress, executive branch agencies, and the federal courts). When one starts to investigate policy making at the state and local levels of government, the organizational context in which policy conflicts are fought can become very complex. In the education policy field, most policy battles are not waged in Washington, but in the numerous school boards, school districts, state legislatures, and state departments of education that pepper the nation. As a result, education policy making can take different forms in each venue, with many different types of individual and organizational actors participating at different stages of the policy process. Given the complexity of the state and local policy-making landscape, scholars may sometimes need to revisit their theoretical assumptions to ensure that they are not excluding important variables from their analysis. In the case at hand, one of the critical factors in the persistence of the policy conflict was the ability of creationists to seek relief from state legislatures and school boards when policy changes in the schools threatened their fundamental beliefs.

But venue shopping is not the only feature of state and local policy making that scholars need to recognize. There also exists a complex relationship between national, state, and local policy making, which can influence how we conceptualize instances of policy change and conflict. As this study demonstrated, policy change need not occur at the federal level to have nationwide impact. In the case at hand, the National Science Foundation catalyzed the creation of the BSCS textbooks, but ultimately the NSF had no authority to force states or school districts to adopt the new material. Rather, that decision rested in the hands of state and local policy makers, who, as we saw, rapidly adopted the evolution-oriented textbooks soon after they were published. Although this research was unable to detail the political mechanisms by which these books were adopted in each state, I contend that the sustainability of the new policy status quo was due largely to the fact that states and school districts actively *chose* the new textbooks, rather than being forced to adopt them by a higher level of government.

Finally, field bridging can shed light on issues of organizational authority and the complex motivations that drive non-political organizations to engage in the policy process. Political organizations are generally oriented toward the policy process or the electoral system, with missions that reflect inherently political goals. Non-political organizations, on the other hand, are oriented toward non-political pursuits, and their engagement in political affairs is often outside the scope of their primary missions. This can make sustained interaction with the policy process difficult for such organizations, and it can result in long periods of inattention to important political issues. This study illustrated the major challenges that scientists faced in opposing their creationist foes throughout history. Scientists can usually be found in three types

of organizations—research universities, educational institutions, and professional organizations—none of which is oriented toward the policy process. Consequently, any engagement by scientists in the evolution-creationism policy conflict often came at the expense of one's research, teaching, or other professional interests, a dilemma that resulted in significant barriers to collective action during the 1970s, even as scientists recognized the growing threat around them. Although they eventually found a way to mobilize at the grassroots level, the main reason that scientists have been so successful in countering creationism is that they were able to forge a strong, enduring alliance with church-state separationist organizations like the ACLU and Americans United for Separation of Church and State.

On the other side, religious organizations engaged in the policy dispute because the teaching of evolution represented a fundamental threat to the authority of their belief systems. Although some religious organizations chose to adapt their beliefs to be more consistent with evolutionary theory, others chose to contest the changes occurring around them, rather than risk compromising their authority over the beliefs and behaviors of their members. Because the changes taking place in the policy field had the potential to upend religious organizational authority, many such organizations had little choice but to step outside their comfort zones to provide support to creationists in both the policy and ideational fields. More generally, political scientists need to be attentive to the complex motivations that drive individuals and organizations to engage in a policy dispute. Motivations can be powerful inducements to action when they are backed not only by an individual's fundamental beliefs, but also the authority of major institutions operating outside the policy field.

Although field bridging can shed light on the organizational dynamics that can have an impact on the policy process, it is not without its theoretical limitations. In particular, field bridging has very little predictive power about the *timing* of bridging events. By adopting a long, historical timeframe, this study was able to demonstrate, *restrospectively*, why creation science emerged at a specific moment in history, but we are unable to predict when the next iteration of creationism will emerge from the ideational field or when the current round of conflict over intelligent design will come to an end. Further, field bridging cannot predict which ideas will be most influential in the policy process. Just because an idea exists doesn't mean that it will catch on among policy makers or the public. For example, the "just a theory" policy solution has been around since the 1920s and remains a fallback solution in modern-day conflicts, but this idea alone was insufficient to revitalize the creationism movement during the long cessation of conflict beginning in the 1930s. Third, field bridging cannot predict whether or not a policy will be enacted. At most, it can specify whether or not the structural conditions are present to capture the attention of policy makers. As we have seen, even though creationists were able to get their issue on the agenda of numerous state legislatures and school boards, they have had few policy victories throughout the years.

VICTORY?

To get a better sense of the importance of field bridging and non-political organizations in the case at hand, it is useful to explore the period immediately following the Supreme Court's 1987 ruling, which struck down creation science. Because the decision only ended the policy conflict, not the battle of ideas, the conditions remained ripe for creationists to once again

emerge from the ashes of policy defeat. Indeed, soon after the Court's decision, history started to repeat itself. Despite their policy losses, creationist organizations in the ideational field did not lose faith. Instead, following the pattern of previous eras, they would retreat for a time, gather new ideas and organizational resources, and forge new alliances to rekindle the policy conflict under the banner of "intelligent design." Like "creation science," intelligent design was a frame that drew heavily on ideas from the ideational field. With a new frame in hand and new supporters, creationists set forth during the 1990s and 2000s to win over a new generation of policy makers.

On the other side of the debate, an interesting divide began to emerge within the scientific community. Whereas scientists tended to be overwhelmingly against creation science, now some of the leaders and supporters of the new intelligent design movement were drawn from the ranks of science itself. To be sure, the vast majority of the scientific community continued to view intelligent design as a distraction from the teaching of evolution, but there was just enough dissent within the scientific community to expand the scope of conflict and introduce new organizational dynamics into the controversy.

To date, the intelligent design era of policy conflict remains unsettled. Creationists have won a few high-profile policy contests through venue shopping, but they have also suffered numerous defeats, including a U.S. District Court case, which ruled that intelligent design was unconstitutional. Until the issue of intelligent design is resolved by the U.S. Supreme Court, or until scientists find a new approach to win more supporters, it is a fair assumption that further policy conflict over intelligent design will ensue. In the next three subsections, I provide a brief overview of the intelligent design controversy, I present public opinion data on Americans' attitudes toward the teaching of intelligent design, and I offer three scenarios by which the overall conflict might come to a decisive end.

Intelligent Design

In 1989, the next round in the battle of ideas began with the publication of the supplemental high-school biology textbook, *Of Pandas and People*. The book was written by Percival Davis (a zoologist)[157] and Dean Kenyon (a biophysicist)[158] and published by the Texas-based Foundation for Thought and Ethics (FTE).[159] The textbook represented a shift in strategy from the more religiously-grounded creation science toward a new anti-evolution frame, called "intelligent design" (ID). ID may have been new to modern creationists, but its intellectual roots predated even Darwin. According to Eugenie Scott, executive director of the National Center for Science Education, ID is the modern-day version of William Paley's 1803 Argument from Design, "which held that God's existence could be proved by examining his works" (Scott 1997, 279-280). Scott continues:

[157] Dr. P. William Davis, Clearwater Christian College, http://www.clearwater.edu/academics/undergrad/faculty/WilliamDavis.asp, accessed June 4, 2011.
[158] Dean Kenyon, Fellow, CSC, The Discovery Institute, http://www.discovery.org/p/89, accessed June 4, 2011.
[159] The current day mission of the Foundation for Thought and Ethics is to "restore the freedom to know to young people, especially in matters of worldview, morality, and conscience, and to return the right of informed consent to families in the education of their children," http://www.fteonline.com/about.html, accessed June 4, 2011. Among the or

Paley used a metaphor: He claimed that if one found an intricately contrived watch, it was obvious that such a thing could not have come together by chance. The existence of a watch implied a watchmaker who had designed the watch with a purpose in mind. Similarly, because there is order, purpose, and design in the world, naturally there is an omniscient designer. The existence of God was proven by the presence of order and intricacy. (p. 280)

ID was less about trying to develop a scientific rationale for the biblical story of Creation, and more of an attempt to develop a sophisticated philosophical argument for the existence of a divine Creator. As we saw in Chapter 3, the idea of creation by a divine designer was the established paradigm before Darwin shook up the scientific establishment, and the notion of design was also consistent with theistic evolution, which posited the existence of a Creator who set the process of evolution in motion.[160] Thus, ID represented both a break from the recent past, which was dominated by young-earth creationists like Henry Morris, and a reconnection to the early years of the battle of ideas. At the same time, it was a conscious attempt to shift the terms of the debate from the fundamentalist ground of creation science to a more academic foundation that could appeal to a wider audience of scientists and religious liberals, while potentially being able to pass constitutional muster.

As during the previous eras of conflict, one man—Phillip Johnson—was responsible for rekindling the battle of ideas. Johnson was (and still is) a law professor at the University of California at Berkeley. In 1991, he published *Darwin on Trial*, which set forth a systematic critique of evolution by natural selection. The book was strongly criticized by scientific reviewers (Scott 1997, 281), but despite the negative reviews, Johnson soon began laying the groundwork with fellow supporters for the so-called "Wedge" strategy, an effort by a new generation of creationists to undercut the teaching of evolution in public schools, while promoting the teaching of intelligent design as an alternative (Forrest and Gross 2007 [2004], 16-17).

In 1996, Johnson and his associates secured organizational support for their cause within the Seattle-based Discovery Institute, which agreed to establish the Center for the Renewal of Science and Culture (now called the Center for Science and Culture). Since then, the Discovery Institute has assumed the creationist leadership mantle in the ideational field, attempting to distance its work from the more religiously-inspired Institute for Creation Research and Creation Research Society (both still in existence as of this writing). Under the auspices of the Discovery Institute, Johnson and a team of collaborators—including Stephen Meyer, John G. West, Jr., William Dembski, Michael Behe, Paul Nelson, and Jonathan Wells—developed the Wedge strategy, which was designed to widen the crack between "naturalistic philosophy" and "empirical science," in an effort to destroy the very foundation of scientific materialism (Forrest and Gross 2007 [2004], 10, 22). According to Forrest and Gross, the financial resources funneled through the Discovery Institute by wealthy conservative benefactors were instrumental in launching the new intelligent design movement (p. 22).

[160] Although ID bears a resemblance to theistic evolution, the proponents of ID generally reject macroevolution, or the idea that species can evolve into new species.

With the battle of ideas alive and well and the intelligent design movement flush with organizational support and financial resources, the stage was once again set for the ideational conflict to spill over into the policy field. Larson (1987) argues that the catalyst for the new round of policy conflict was the federal government. In 1991, the National Academy of Sciences (NAS) was given responsibility by the U.S. Department of Education and the National Science Teachers Association for drafting new national science standards. In December 1994, the NAS finished the first draft, which included instruction in Darwinian evolution (p. 198). Under the Goals 2000 Act, passed by the Democratic Congress after President Clinton took office in 1993, states would have been required to enact the new standards in order to receive federal education funding. But following the Republican takeover of Congress in 1995, the new majority repealed the authority of the federal government to approve state science standards. States would still have to produce new standards, but the federal government would have no effective oversight over them (p. 199). By 2000, all states except Iowa had adopted science standards, and new conflicts over evolution erupted in one-third of them. Despite the political opportunity created by Goals 2000 for creationists to get back in the game, scientists were successful in almost all of the new policy battles (p. 200). In brief, the new state science standards further consolidated scientists' policy gains during the 1990s, such that "[o]n balance, evolution teaching gained ground through the standards-setting process" (p. 200).

Despite scientists' policy victories, creationists managed to mount a political comeback, drawing support from the ideational field. Two states have been at the center of the controversy in recent years: Kansas and Pennsylvania. In 1999, the Kansas Board of Education attempted to remove macro-evolutionary theory from the state's draft science standards. The fight began in May 1999 when Tom Willis, director of the Creation Science Association of Mid-America, along with two other board members, introduced a creationist alternative. Divided between the two alternatives, the Board requested further time to come to a resolution. Over the next three months, public hearings were held as the drafting committee attempted to find some sort of compromise. Eventually, conservatives won the day, voting to keep micro-evolution in the standards, while deleting any reference to macro-evolution. Additionally, the policy allowed local school districts to continue to teach evolution at their discretion, but it would not be required by the state. These changes were sufficient to swing one Board member, a Mennonite, to the creationists' side, and by a vote of 6 to 4, the new standards were passed on August 11, 1999 (Larson 1987, 203).

In response, the National Academy of Sciences prevented the new standards from being implemented, because it held the copyright to certain model language sections used by the state. The ACLU also threatened to sue, and prior to the Republican Board of Education primary in 2000, People for the American Way staged a satirical play intended to ridicule the creationist movement. The results of the primary were a blow to creationists, as three of the four conservative supporters of the creationist policy were thrown out of office. Shortly after the change in composition of the Board, new science standards were adopted, which closely adhered to the NAS model standards (Larson 2003, 203-204). In 2004, conservative politicians won back control of the state school board and, one year later, with the support of the leaders of the intelligent design movement, they succeeded in passing new teaching guidelines that challenged

the validity of evolutionary theory.[161] The victory was short lived, however. In 2007, the policy was overturned, as a coalition of parents, teachers, and moderate Republicans and Democrats joined together in opposition to the new rules.[162]

In Pennsylvania, the Dover Area School Board passed a resolution in 2004, which stated that "[s]tudents will be made aware of gaps/problems in Darwin's theory and of other theories of evolution including, but not limited to, intelligent design." In addition to requiring that biology teachers read a disclaimer that evolution was not a fact, the policy also required that teachers make available the supplemental textbook, *Of Pandas and People*, for students who wanted to learn more about intelligent design (Forrest and Gross 2007 [2004], 325). Two months after the new policy was enacted, a group of Dover parents filed a lawsuit in U.S. District Court. Representing the plaintiffs were the ACLU, Americans United for Separation of Church and State, and the Pepper Hamilton law firm. Additionally, the National Center for Science Education served as a consultant (p. 326). After an extensive trial, Judge John E. Jones III[163] ruled that the Dover policy violated the Establishment Clause (*Kitzmiller v. Dover Area School District*, 400 F. Supp. 2d 707). In his ruling, Judge Jones argued that intelligent design was not science. Rather, he wrote, "ID is nothing less than the progeny of creationism. What is likely the strongest evidence supporting the finding of ID's creationist nature is the history and historical pedigree of the book to which students in Dover's ninth grade biology class are referred, *Pandas*" (p. 721). The ruling was not subsequently appealed.

Public Opinion

While the tide appears to be turning against the proponents of intelligent design in one policy dispute after another, the movement does not appear to be losing the support of key creationist organizations in the ideational field (e.g., the Discovery Institute), other religious organizations, or even members of the mass public. According to a 2005 poll conducted by the Pew Institute on Religion and the Public Life, 64 percent of Americans favored the teaching of creationism alongside evolution, while 38 percent favored the teaching of creationism instead of evolution. Among evangelical Protestants, 60 percent favored the teaching of creationism over evolution, compared to only 26 percent of mainline Protestants, 31 percent of white Catholics, and 17 percent of "seculars."[164] These data indicate that there remains widespread support for efforts to design policies that allow teachers to present alternative, religious knowledge about the origins of humankind.

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[161] Peter Slevin, "Kansas Education Board First to Back 'Intelligent Design,'" *Washington Post*, November 8, 2005, http://www.washingtonpost.com/wp-dyn/content/article/2005/11/08/AR2005110801211.html, accessed June 5, 2011.

[162] Suzanne Goldenberg, "Creationists Defeated in Kansas School Vote on Science Teaching: Guidelines Challenging Darwinism Banned: Decision Is Latest Blow to Intelligent Design Activists," *The Guardian (London)*, February 15, 2007.

[163] Judge John E. Jones III was a Lutheran and Republican appointed to the bench by President George W. Bush in 2002. Matt Ridley, "John Jones," *Time Magazine*, April 30, 2006, http://www.time.com/time/magazine/article/0,9171,1187265,00.html, accessed June 5, 2011.

[164] Pew Forum on Religion and Public Life, "Public Divided on Origins of Life: Religion a Strength and Weakness for Both Parties," August 30, 2005.

Moreover, according to Gallup, which has been tracking public opinion on the question of human origins since 1982, there has been little change in the public's opinions about the origins of humankind over the past 30 years (Figure 10). In 2010, 40 percent of respondents subscribed to the creationist view of the world that God created man in his present form; 38 percent subscribed to the "theistic evolutionist" view that humans developed over millions of years with God directing the process; and 16 percent said that they believed in the view most compatible with natural selection—that humans developed over millions of years, with God playing no part in the process. The only group to show a large change since 1982 was the natural selection group, which has been trending upward since the late 1990s. Both creationists and theistic evolutionists have remained essentially flat in their views, with occasional ups and downs over the years.

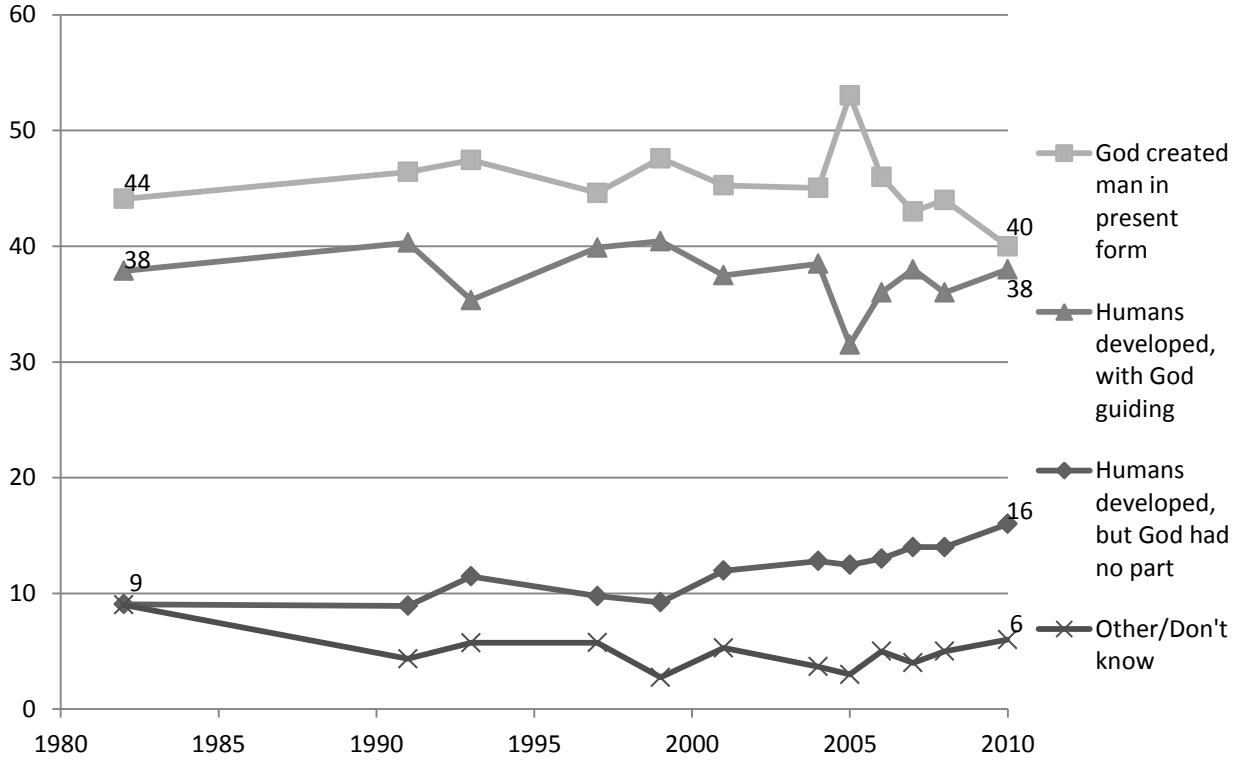

Figure 10. American opinions concerning human origins.[165]

These data can be interpreted in a couple of ways. Combining respondents who believe in natural selection with those who believe in theistic evolution, a bare majority of Americans (roughly 54%) now believe in some form of evolution, while only 40% believe in the creationist point of view. On the other hand, combining creationists and theistic evolutionists, we can interpret the data to conclude that close to 80% of Americans believe that God played a role in

[165] Gallup 1982-2010. With the exception of 2005, question wording changed only slightly over the years, but the choices available to respondents remained comparable. In 2005, the word "developed" was replaced with "evolved," and the "Bible" was explicitly mentioned as part of the creation response. I include the 2005 data here to demonstrate the degree to which public opinion can be swayed by how the topic is framed. See the appendix for complete question wording.

human development. Additionally, bringing in the Pew data, over 60% of Americans believe that both evolution and creationism (in some form) should be taught in public school classrooms.

Regardless of how one slices the data, it is clear that the American public remains conflicted on the issue of evolution and the extent to which non-scientific explanations of human origins should be taught in the schools. For the new generation of ID proponents and the older generation of creation scientists, there remains significant permissive support among the American public to continue their cause. For scientists, public opinion reveals that much work remains to be done. Despite numerous major and minor policy victories throughout the decades, scientists have managed to convince only a slight majority of the public of the veracity of evolution. In other words, scientists may be winning the policy conflict, but the battle of ideas remains alive and hotly contested.

Ending the Policy Conflict

Placing intelligent design in a more theoretical context, how might the current policy dispute over ID and the overall battle of ideas be brought to a decisive end? I argue that scientists have come close to resolving the overall conflict in their favor on a few occasions throughout history, and the battle is theirs to lose at this point in history. Absent a major shift in public opinion or a reversal of the two precedent-setting Supreme Court cases, creationists are unlikely to win the policy conflict in the near future. On the other hand, scientists remain in a strong position to further consolidate their policy gains and to chip away at the creationist base of support in the ideational field. To that end, I argue that there are three potential solutions by which scientists can decisively "win" the overall conflict over evolution.[166]

First, if we follow Schattschneider's arguments to their logical conclusion, then one solution is to find ways of channeling recurring policy conflicts into private spheres of activity—either by chipping away at the organizational support of one side (so it no longer has the ability to initiate and sustain a public conflict), or by persuading influential institutions in society to take action of their own accord (as creationists were able to do with textbook publishers from 1930-1960). In the case of intelligent design, the best option for scientists is to undertake a systematic campaign to discredit the Discovery Institute and other creationist organizations operating in the battle of ideas. But given the deep reservoir of resources available to these organizations, this approach seems exceedingly unlikely to bear fruit.

Second, rather than simply trying to channel conflict away from the public domain, another approach is to shut down the corresponding private conflict. In the case at hand, scientists must find a way to "win" the battle of ideas. Winning in the ideational field can take one of two forms. Either creationists can find themselves without the resources (ideational or material) to perpetuate the dispute, or scientists can somehow convince a greater segment of the population that evolution is the best explanation of human origins. The first solution requires that organizational backers withdraw their support from the creationist cause. This could happen if they lose interest in the topic and decide to invest their resources elsewhere. Alternatively, if the Supreme Court ends up banning the teaching of intelligent design, creationists could find

[166] Given the overwhelming obstacles faced by creationists, I only consider what it would take for scientists to win the overall conflict. This treatment is not meant to reflect this researcher's bias toward either side in the dispute.

themselves without an alternative set of ideas to keep the movement alive. The second solution requires that scientists do a better job educating the American public about the theory of evolution. To their credit, scientists have been visible and active in the ideational field since the creation-science era came to an end. The National Center for Science Education, under the leadership of Eugenie Scott, has been quick to mobilize against intelligent design, and it remains the standard bearer for evolution in the battle of ideas. But to truly consolidate their gains, scientists will need to address the weakest link in their policy victory—the teachers who are unwilling or incapable of teaching the theory of evolution at the level of depth needed to truly make a difference in students' understanding of human origins. This solution is an issue of implementation that requires advocating for policy oversight mechanisms to ensure that fidelity to state science standards is maintained at the classroom level.

Finally, the inability of scientists to shut down or weaken creationist organizations during the early 1970s suggests that the winners in any policy dispute need to be especially vigilant in the immediate years following their victory, taking proactive steps to keep their opponents from reorganizing and reentering the policy field. This advice is consistent with Patashnik's findings concerning the fate of certain general interest reforms, but what are the specific strategies that winning organizations need to adopt to ensure long-term victory? In the case at hand, scientists remained organized and mobilized following the 1987 Supreme Court decision and, for the most part, have been able to thwart the emergent intelligent design movement, but they were not able to put their opponents out of business. With so many organizational resources to draw upon, creationists have time and time again been able to emerge from the ashes of defeat. Thus, in order to prevent creationists from turning to the religious domain for support, scientists must deepen their outreach to religious organizations that are friendly to evolution. If more religious leaders are willing to back evolution *and* oppose intelligent design, they might begin to convince an increasing number of Americans that theistic evolution is a viable middle ground position for people of faith to hold.

RELATED ISSUES

While it is clear that the theoretical framework developed in this study appears to hold up when applied to the intelligent design controversy, what is the theory's general applicability outside of the evolution-creationism controversy? We can begin to answer this question by setting the conflict over evolution in the context of related policy conflicts: same-sex marriage, stem cell research, climate change, abortion, and school prayer. By reconceptualizing each dispute as a crisis of authority for religious organizations, we can begin to break down the underlying causes of conflict and expose the underlying organizational dynamics. In all of these examples, including the teaching of evolution, the conflict boils down to a question of who should have ultimate authority over the beliefs and behaviors of American citizens. Conflicts over same-sex marriage, abortion, and school prayer are about *behaviors*. For same-sex marriage and abortion, some religious organizations believe that these practices are immoral and should be outlawed completely throughout the United States. For school prayer, some religious organizations believe that the rights of their adherents to pray in any setting—public or otherwise—should not be infringed by government. Conflicts over stem cell research, climate change, and evolution, on the other hand, are about *beliefs*. In all three cases, there is a fundamental dispute over knowledge, and scientists are often on the other side of the conflict,

having to explain difficult questions that don't lend themselves to direct experimentation, such as: When does life begin? Is climate change a real phenomenon? How do we know that climate change is man-made and not a natural occurrence? How was the universe created? How were human beings and other species of animals created?

The distinction between beliefs and behaviors is not a bright line. In fact, most of the examples cited above exhibit characteristics of both types of conflict. At the heart of the same-sex marriage conflict, for example, is the question of whether or not homosexuality is a biological fact or a choice that individuals are free to make, while abortion involves questions about when life begins. Likewise, stem cell research has produced policy solutions proscribing the ability of researchers to experiment with certain types of stem cells, and the dispute over climate change is still in flux, with some policy makers calling for new policies that would restrict the amount of carbon that the American business industry can release into the atmosphere.

Of the examples cited above, climate change provides the best comparison to evolution. On its face, the religious dimension of the climate change debate may not be apparent. But its religious basis can be traced to the same source as the debate over evolution: the Bible's opening chapter of Genesis. Christianity has wrestled for centuries with the question of humankind's proper relationship to the earth. The Bible leaves no doubt that God "created the heavens and the earth" (Genesis 1:1), but what requirements does the Bible impose upon humankind to be responsible stewards of the earth? Some religious individuals argue that there is a strong scriptural basis for environmental stewardship (Berry 2006; Van Dyke et al. 1996), and although conservative Protestantism has, at times, been blamed for encouraging anti-environmental beliefs and behaviors (White 1967), in recent years a growing number of evangelical Protestants have mobilized in support of policy change to address the emerging climate change crisis (Nagle 2008).

According to Nagle (2008, 61-62), evangelicals first began organizing themselves around environmental issues in 1993, with the founding of the Evangelical Environmental Network. Then, in 2000, a group of evangelicals issued the "Cornwall Declaration," which articulated a set of beliefs and aspirations outlining "the moral necessity of ecological stewardship." Among their beliefs was the idea that "[m]en and women were created in the image of God, given a privileged place among creatures, and commanded to exercise stewardship over the earth."[167] In 2005, the Cornwall Declaration became the basis for the founding a new group—the Interfaith Stewardship Alliance (ISA; now known as the Cornwall Alliance for the Stewardship of Creation).

In 2006, a different group of evangelicals formed the Evangelical Climate Initiative, which produced a report entitled "Climate Change: An Evangelical Call to Action" (Nagle 2008, 63). The report put forward four claims: first, that "human-induced" climate change was a real phenomenon; second, that climate change would produce significant consequences, hitting the poor the hardest; third, that "Christian moral convictions demand our response" to fix the

[167] Cornwall Alliance for the Stewardship of Creation, "The Cornwall Declaration on Environmental Stewardship," http://www.cornwallalliance.org/articles/read/the-cornwall-declaration-on-environmental-stewardship/, accessed 6/11/2011.

problem; and fourth, that there was an urgent need for immediate action.[168] Signing on to the call-to-action were a number of high-profile evangelical leaders associated with the National Association of Evangelicals, Wheaton College, Calvin College, and the Evangelical Environmental Network (p. 63).

In response, the ISA released a report called "A Call to Truth, Prudence, and Protection of the Poor: Evangelical Response to Global Warming," which counter argued that "[h]uman emissions of carbon and other greenhouse gases are probably a minor and possibly an insignificant contributor to [the] causes" of global warming (Beisner et al. 2006, 17-18). Further, the authors of the report argued that government policies designed to reduce carbon emissions would end up causing "greater harm than good to humanity—especially the poor—while offering virtually no benefit to the rest of the world's inhabitants" (p. 18). Then, in 2008, a group of Southern Baptist leaders jumped into the fray to challenge the Southern Baptist Convention's official position on global warming, arguing that the denomination's "engagement with these issues has often been too timid, failing to produce a unified moral voice."[169]

Although the debate within Protestant Christianity over climate change is relatively young and still evolving, it is already beginning to exhibit some of the same characteristics of the debate over evolution during the early 20th century. At the core of the controversy are competing interpretations of the Bible and varying levels of acceptance concerning the scientific evidence for man-made climate change. On one side, some evangelicals have argued that climate change is indeed a real, man-made phenomenon, and unless we design new policies to reverse the warming trend, the consequences for humanity will be severe. On the other side, some evangelicals have questioned the underlying science and argued that we will do more harm than good to the world's most vulnerable population by adopting a heavy-handed approach to regulation of carbon emissions.

The key difference between climate change and evolution is that the policy conflict has a stronger national component to it, with Congress having more authority to design policy solutions in the environmental policy field than it has in the education policy field. It remains to be seen the extent to which evangelical Christians will be able to influence the national policy conflict over climate change. In 2007, four evangelicals were called to testify at a hearing of the U.S. Senate Committee on Environment and Public Works (Nagle 2008, 64). But for the most part, the recent national policy conflict has been dominated by business interests on one side and environmentalists and scientists on the other, with religious organizations lining up on both sides of the divide. At the same time, opponents of evolution have begun to link evolution and global warming in state-level policy disputes. According to a March 2010 article in the *New York Times*, Kentucky, Texas, Louisiana, and South Dakota have attempted to pass new policies that would allow for both sides of the controversies over evolution and global warming to be taught in public schools. In the words of John West of the Discovery Institute, "There is a lot of similar dogmatism on this issue, with scientists being persecuted for findings that are not in keeping with the orthodoxy. We think analyzing and evaluating scientific evidence is a good thing, whether that is about global warming or evolution." On the other side of the divide, Arizona State

[168] The Evangelical Climate Initiative, "Climate Change: An Evangelical Call to Action," January 2006, http://christiansandclimate.org/learn/call-to-action/, accessed 6/11/2011.
[169] Neela Banerjee, "Southern Baptists Back a Shift on Climate Change," *The New York Times*, 3/10/2008.

University physicist Lawrence Krause pinpoints the knowledge-based nature of the dispute: "Whether there is a battle over evolution now, there is a secondary battle to diminish other hot-button issues like Big Bang and, increasingly, climate change. It is all about casting doubt on the veracity of science—to say it is just one view of the world, just another story, no better or more valid than fundamentalism."[170]

Two features of this organizational arrangement are comparable to the evolution case. First, religious organizations are using the debate over climate change to reassert their authority over all matters involving man's stewardship of Creation. By affirming or contesting scientific knowledge about climate change, religious leaders are reframing the debate in terms that reaffirm the religious beliefs and values of their congregations and denominations. In the same way, religious leaders during the early 20th century used the issue of evolution as a way to reassert their authority over worldly knowledge and, thus, to remain relevant in an increasingly secular world. In both cases, religious organizations were responding to other religious organizations with competing viewpoints, as well as scientists, who claimed to have special knowledge about the natural world. Second, the policy conflict over whether to limit carbon emissions is secondary to the ideational conflict that is being waged between scientists and other organized interests concerning the nature and scope of climate change. As in the evolution case, scientists have put forward a theory of why the earth's temperature appears to be rising consistently from one year to the next, and they have pieced together as much indirect evidence as possible from the geologic record to support their claims. Nevertheless, there remains considerable doubt within the religious community about both the existence of climate change as a man-made phenomenon and its consequences for policy. Additionally, creationists have begun to link the issues of evolution and climate change in an attempt to cast doubt on all scientific knowledge and as a way to de-link the anti-evolution movement from its religious history.

If the previous assertion is correct, and there does exist a separate ideational field of conflict on the issue of climate change, then the policy conflict over carbon emissions should mirror the organizational dynamics of the evolution conflict. Congress has yet to enact legislation to shift the national status quo, but some states have taken action unilaterally. A good test of the theory in this dissertation would be to explore the organizational dynamics that resulted from the climate change legislation that was enacted in California in 2006.[171] To what extent has the California policy change been consolidated, and to what extent have the "losers" in the policy debate been put out of business by the new law? Are religious groups mobilized for or against the new policy, and what role have they played in perpetuating the battle of ideas in the ideational field? Depending on how this policy field evolves, it could turn into another instance of contested policy change with scientists, religious organizations, and an expanded set of actors engaged in perpetual battle, for decades to come, over the nature and consequences of climate change.[172]

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[170] Leslie Kaufman, "Darwin Foes Add Warming to Targets," *The New York Times*, 3/3/2010.
[171] For more details, see http://www.arb.ca.gov/cc/cc.htm and http://climatechange.ca.gov/index.php.
[172] Of course, if climate change is as severe as many scientists predict, the effects could begin to be felt within the next couple of decades. If the consequences are severe enough, even the most diehard skeptics may have to reevaluate their position.

FUTURE RESEARCH AND FINAL THOUGHTS

In closing, the findings of this dissertation provide valuable insights into the policy process, which should become part of any study of policy development. First, whenever possible, political actors should be conceptualized as organizations. By treating policy combatants as organizations, we can expand our set of assumptions about the resources and motivations available to political actors when they engage the policy field. In turn, this focus on organizations allows for the introduction of non-political organizations into the analysis, which, as we have seen, can play a critical role in the perpetuation of conflict over time. Second, studies of policy change should adopt a longer time horizon than the short window surrounding the moment of policy enactment. It is not always necessary to cover 100 years of history in a policy analysis, but going backward in time several years or decades might unearth organizational dynamics that were consequential to the policy outcome. Finally, as this dissertation has shown, policy outcomes can get messy and difficult to disentangle when conflicts are fought at the state and local level. Unfortunately, this project was unable to canvass every state and local instance of policy conflict going back to the 1920s, but every attempt was made to include as much state and local level context as necessary to make a convincing argument about national policy change. Rather than shying away from studies of state- and local-level policy making, more research is clearly needed at these levels of government. The education policy field, in particular, is fertile ground for studies of policy development at the state and local levels, because so much authority over education matters is concentrated in local school districts.

Future research should start with the organizational theory of change developed in this dissertation, using similar case studies to test its scope and explanatory power. A more developed analysis of the intelligent design era can provide a first test of the theory by investigating the extent to which the founders of intelligent design drew resources from the ideational field to keep the movement alive. Was the ideational field truly consequential to the intelligent design movement's inception, or did the movement arise independent of the creationist organizations preceding it?

A second, more difficult test of the theory, would start with the climate change policy field described above. Is this policy conflict really two conflicts disguised as one? If so, what is the nature of the corresponding private conflict, and who are the primary combatants? If business and religion really are the two major players on one side, with scientists on the other, then what can an organizational theory of policy change offer that existing theories of collective action and policy development are unable to provide? After all, it is well known that business interests have deep pockets to finance their political lobbying. Aside from this truism, are there other organizational dynamics outside of the policy field, which might be consequential to the success or failure of the policy conflict? Finally, if the conflict does prove to be two conflicts in one, exhibiting similar characteristics to the evolution-creationism dispute, what can we conclude about the prospects for ending the conflict in favor of scientists or their opponents?

Lastly, a third test of the theory might consider a case like school prayer, which includes non-political organizations as a major actor but does not involve a dispute over scientific knowledge. In 1962, the U.S. Supreme Court ruled that prayer in public schools was a violation of the First Amendment's Establishment Clause (*Engel v. Vitale*, 370 U.S. 421). Since then, there have been numerous attempts to reverse the new policy status quo, and the vast majority of the

American public remains supportive of allowing some form of prayer in public schools (Gash and Gonzales 2008). On its face, this case appears to be another example of contested policy change, though with far fewer policy battles at the state and local levels of government than the case of evolution. What accounts for the contested nature of this dispute? Is there a distinct organizational field, other than the field of religion, that has kept this policy conflict alive? In the states where policy battles have been fought since the 1962 ruling, which organizations, if any, were behind those disputes and from where did they draw their support? My expectation is that organizations have been consequential to the perpetuation of conflict, but most of the heavy lifting has been done by political organizations associated with the Christian Right, rather than the more outright religious organizations (fundamentalists, evangelicals, and other conservative Protestants) in the religious field. If true, then the case of school prayer might just as well be explained with the standard tools of political science than with the expanded set of organizational tools developed in this dissertation.

Although issue areas involving religion and science may seem inconsequential compared to the issues that dominate much of American politics (e.g., the economy and national defense), it is important that researchers take the time to investigate all types of political conflict, delving deeper into the motivations and resources that sustain policy disputes over time. As we have seen, the diversity of organizational forms and structures that interact with the policy process truly boggles the mind. Organizations—political and otherwise—are critical players in the constantly evolving drama of American politics, both for the resources they provide and the structures of authority that guide the beliefs and behaviors of their members. Organizations are also microcosms of the great spectacle of American public life, both reflecting and shaping the society of which they are a part.

By placing organizations front and center, theories of politics and policy can only get better and more adept at describing and explaining the full range of political phenomena that we observe in the real world. What we lose in parsimony, we more than make up for in the rich explanatory accounts that come from expanding one's field of view and temporal boundaries. As this dissertation has shown, valuable knowledge about the political system remains to be unearthed. One simply has to know where to look.

BIBLIOGRAPHY

American Association for the Advancement of Science. 1968. "News in Brief." *Science* 162 (November 22): 882.

American Institute of Biological Sciences. 1970a. "Anti-Evolution Ruling." *BioScience* 20 (May 1): 524.

———. 1970b. "The California Anti-Evolution Ruling." *BioScience* 20 (June 1): 640-642.

———. 1972. *The AIBS Story*. Washington: The American Institute of Biological Sciences.

Andrews, Kenneth T. 2002. "Movement-Countermovement Dynamics and the Emergence of New Institutions: The Case of 'White Flight' Schools in Mississippi." *Social Forces* 80 (March): 911-936.

Ansell, Christopher K. 2003. "Community Embeddedness and Collaborative Governance in the San Francisco Bay Area Environmental Movement." In *Social Movements and Networks: Relational Approaches to Collective Action,* ed. M. Diani and D. McAdam. Oxford: Oxford University Press.

Aulie, Richard P. 1972a. "The Doctrine of Special Creation, Part I." *The American Biology Teacher* 34 (April): 191-200.

———. 1972b. "The Doctrine of Special Creation, Part II." *The American Biology Teacher* 34 (May): 261-268, 281.

Ayala, Francisco J. 2007. *Darwin's Gift to Science and Religion*. Washington, DC: Joseph Henry Press.

Bailey, Kenneth K. 1950. "The Enactment of Tennessee's Antievolution Law." *The Journal of Southern History* 16 (November): 472-490.

Barnard, Chester I. 1968 [1938]. *The Functions of the Executive*. Thirtieth Anniversary ed. Cambridge, Mass.: Harvard University Press.

Baumgartner, Frank R., and Bryan D. Jones. 1991. "Agenda Dynamics and Policy Subsystems." *The Journal of Politics* 53 (November): 1044-1074.

———. 1993. *Agendas and Instability in American Politics*. Chicago: University of Chicago Press.

Becker, Penny Edgell. 1999. *Congregations in Conflict: Cultural Models of Local Religious Life*. Cambridge, UK & New York: Cambridge University Press.

Beisner, E. Calvin, Paul K. Driessen, Ross McKitrick, and Roy W. Spencer. 2006. "A Call to Truth, Prudence, and Protection of the Poor: An Evangelical Response to Global Warming." Cornwall Alliance for the Stewardship of Creation.

Bell, Robert K. 2008. "Science and Technology: Public Attitudes and Understanding." In *Science and Engineering Indicators 2008,* ed. National Science Board. Arlington, VA: National Science Foundation.

Berkman, Michael B., Julianna Sandell Pacheco, and Eric Plutzer. 2008. "Evolution and Creationism in America's Classrooms: A National Portrait." *PLoS Biology* 6 (May): 920-924.

Berry, Frances S., Ralph S. Brower, Sang Ok Choi, Wendy Xinfang Goa, HeeSoun Jang, Myungjung Kwon, and Jessica Word. 2004. "Three Traditions of Network Research: What the Public Management Research Agenda Can Learn from Other Research Communities." *Public Administration Review* 64 (September/October): 539-552.

Berry, R.J., ed. 2006. *Environmental Stewardship: Critical Perspectives, Past and Present*. London & New York: T&T Clark.

Bevan, William. 1972a. “The Welfare of Science in an Era of Change.” *Science* 176 (June 2): 990-996.
———. 1972b. “Two Cooks for the Same Kitchen?” *Science* 177 (September 29): 1155.
Beyerlein, Kraig. 2003. “Educational Elites and the Movement to Secularize Public Education: The Case of the National Education Association.” In *The Secular Revolution: Power, Interests, and Conflict in the Secularization of American Public Life*, ed. C. Smith. Berkeley & Los Angeles: University of California Press.
Beyerlein, Kraig, and John R. Hipp. 2006. “From Pews to Participation: The Effect of Congregation Activity and Context on Bridging Civic Engagement.” *Social Problems* 53: 97-117.
Bird, Wendell. 1978. “Freedom of Religion and Science Instruction in Public Schools.” *Yale Law Journal* 87 (January): 515-570.
Bishop, George F. 2006. “Polls Apart on Human Origins.” *Public Opinion Pros*, August/September.
———. 2007. “Evolution, Religion, and the 'Culture War' in American Politics.” In *Annual Meeting of the American Political Science Association*. Chicago, IL.
Bowler, Peter J. 2009 [1983]. *Evolution: The History of an Idea*. Berkeley and Los Angeles: University of California Press.
Broad, William J. 1981. “Louisiana Puts God into Biology Lessons.” *Science* 213 (August 7): 628-629.
Bronk, Detlev W. 1972. “The Creation of the American Institute of Biological Sciences.” In *The AIBS Story*. Washington: American Institute of Biological Sciences.
Burstein, Paul. 2003. “The Impact of Public Opinion on Public Policy: A Review and an Agenda.” *Political Research Quarterly* 56 (March): 29-40.
Bush, Vannevar. 1945. “Science: The Endless Frontier, a Report to the President.” Washington: U.S. Government Printing Office.
Campbell, David E. 2004. “Acts of Faith: Churches and Political Engagement.” *Political Behavior* 26 (June): 155-180.
Campbell, John L. 2001. “Institutional Analysis and the Role of Ideas in Political Economy.” In *The Rise of Neoliberalism and Institutional Analysis*, ed. J. L. Campbell and O. K. Pedersen. Princeton: Princeton University Press.
Carson, Hampton L. 1972. “Evolutionary Biology: Its Value to Society.” *BioScience* 22 (June): 349-352.
Chaves, Mark. 1993. “Intraorganizational Power and Internal Secularization in Protestant Denominations.” *The American Journal of Sociology* 99 (July): 1-48.
———. 1994. “Secularization as Declining Religious Authority.” *Social Forces* 72 (March): 749-774.
Clark, Harold W. 1966. *Crusader for Creation: The Life and Writings of George Mccready Price*. Mountain View, Calif.: Pacific Press Publishing Association.
Cleaver, Thomas J. 1971. “Advertising Policy and Creationism.” *The American Biology Teacher* 33 (May): 300.
Cory, Lawrence R. 1973. “Creationism and the Scientific Method.” *The American Biology Teacher* 35 (April): 223-225.
Cracraft, Joel. 1982. “Reflections on the Arkansas Creation Trial.” *Paleobiology* 8 (Spring): 83-89.

Cyert, Richard M., and James G. March. 1963. *A Behavioral Theory of the Firm*. Englewood Cliffs, N.J.: Prentice-Hall.
Dahl, Robert A. 1964. *Who Governs? Democracy and Power in an American City*. New Haven, Conn.: Yale University Press
Das, T. K., and Bing-Sheng Teng. 2000. "A Resource-Based Theory of Strategic Alliances." *Journal of Management* 26: 31-61.
DiMaggio, Paul, and Walter Powell. 1983. "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields." *American Sociological Review* 48 (April): 147-160.
Downs, Anthony. 1967. *Inside Bureaucracy*. Boston: Little, Brown, and Co.
Edwords, Frederick. 1982. "Victory in Arkansas: The Trial, Decision, and Aftermath." *Creation/Evolution Journal* 3 (Winter): 1982.
Ehrle, Elwood B. 1970. "California's Anti-Evolution Ruling." *BioScience* 20 (March 1): 291.
Eisenhardt, Kathleen M., and Claudia Bird Schoonhoven. 1996. "Resource-Based View of Strategic Alliance Formation: Strategic and Social Effects in Entrepreneurial Firms." *Organization Science* 7 (March-April): 136-150.
Emirbayer, Mustafa, and Jeff Goodwin. 1994. "Network Analysis, Culture, and the Problem of Agency." *American Journal of Sociology* 99 (May): 1411-1454.
Engleman, Laura, ed. 2001. *The BSCS Story: A History of the Biological Sciences Curriculum Study*. Colorado Springs: BSCS.
Etzioni, Amitai. 1965. "Organizational Control Structure." In *Handbook of Organizations*, ed. J. G. March. Chicago: Rand McNally.
Etzioni, Amitai, and Clyde Nunn. 1974. "The Public Appreciation of Science in Contemporary America." *Daedalus* 103 (Summer): 191-205.
Finke, Roger, and Rodney Stark. 2005. *The Churching of America, 1776-2005: Winners and Losers in Our Religious Economy*. 2nd ed. New Brunswick, N.J.: Rutgers University Press.
Forrest, Barbara, and Paul R. Gross. 2007 [2004]. *Creationism's Trojan Horse: The Wedge of Intelligent Design*. Oxford: Oxford University Press.
Fowler, Dean R. 1982. "The Creationist Movement." *The American Biology Teacher* 44 (December): 528-530, 539-542.
Ganz, Marshall. 2000. "Resources and Resourcefulness: Strategic Capacity in the Unionization of California Agriculture, 1959-1966." *American Journal of Sociology* 105 (Jan.): 1003-1062.
Gash, Alison, and Angelo Gonzales. 2008. "School Prayer." In *Public Opinion and Constitutional Controversy*, ed. N. Persily, J. Citrin and P. Egan. Oxford: Oxford Press.
Gerlovich, Jack A., Karl E. Goellner, Stanley C. Grant, Robert W. Hanson, Donald M. Huffman, Cifford G. McCollum, Lois H. Tiffany, and Stanley L. Weinberg. 1980. "Creationism in Iowa." *Science* 208 (June 13): 1208, 1210-1211.
Gish, Duane T. 1970. "A Challenge to Neo-Darwinism." *The American Biology Teacher* 32 (November): 495-497.
———. 1971. "Gish Replies on Creationism." *The American Biology Teacher* 33 (September): 362-363.
———. 1973. "Creation, Evolution, and the Historical Evidence." *The American Biology Teacher* 35 (March): 132-140.

Grabiner, Judith V., and Peter D. Miller. 1974. “Effects of the Scopes Trial: Was It a Victory for Evolutionists?” *Science* 185 (September): 832-837.
Granovetter, Mark. 1985. “Economic Action and Social Structure: The Problem of Embeddedness.” *The American Journal of Sociology* 91 (November): 481-510.
Gregory, Frederick. 1986. “The Impact of Darwinian Evolution on Protestant Theology in the Nineteenth Century.” In *God and Nature: Historical Essays on the Encounter between Christianity and Science*, ed. D. C. Lindberg and R. L. Numbers. Berkeley and Los Angeles: University of California Press.
Grobman, Arnold B. 1959. “The Biological Sciences Curriculum Study.” *AIBS Bulletin* 9 (April): 21-23.
Haas, Ernst B. 1990. *When Knowledge Is Power: Three Models of Change in International Organizations*. Berkeley: University of California Press.
Hannan, Michael T., and John Freeman. 1977. “The Population Ecology of Organizations.” *American Journal of Sociology* 82 (March): 929-964.
Hatch, Nathan O. 1989. *The Democratization of American Christianity*. New Haven: Yale University Press.
Heclo, Hugh. 1978. “Issue Networks and the Executive Establishment.” In *The New American Political System*, ed. A. King. Washington: AEI.
Holden, Constance. 1980. “Republican Candidate Picks Fight with Darwin.” *Science* 209 (September): 1214.
Holt, Ruth V. 1971. “More Comments on Special Creation.” *The American Biology Teacher* 33 (May): 302-303.
———. 1972. “Objections to Evolution Theory.” *The American Biology Teacher* 34 (May): 287-288.
Hurd, Paul D. 1961. “Biological Education in American Secondary Schools: 1890-1960.” Washington, DC: American Institute of Biological Sciences.
Jameson, David L. 1970. “Evolutionary Theory and Politics.” *BioScience* 20 (June 1): 643.
———. 1971. “Scientist Versus Scientist Revisited.” *BioScience* 21 (January 1): 4-5.
Katznelson, Ira, and Margaret Weir. 1985. *Schooling for All: Class, Race, and the Decline of the Democratic Ideal*. Berkeley: University of California Press.
Keller, Ann. 2001. “Good Science, Green Policy: The Role of Scientists in Environmental Policy in the United States.” Ph.D. Diss., Political Science, University of California, Berkeley.
Kerr, Peggy L. 1982. “The 'Creation-Science' Case and Pro Bono Publico.” *Science, Technology, and Human Values* 40 (Summer): 57-62.
Kingdon, John W. 1995. *Agendas, Alternatives, and Public Policies*. 2nd ed. New York: Harper Collins College Publishers.
Knoke, David. 1988. “Incentives in Collective Action Organizations.” *American Sociological Review* 53 (June): 311-329.
Kuhn, Thomas S. 1996. *The Structure of Scientific Revolutions*. Third ed. Chicago: The University of Chicago Press.
Larson, Edward J. 1987. “Before the Crusade: Evolution in American Secondary Education before 1920.” *Journal of the History of Biology* 20 (Spring): 89-114.
———. 1997. *Summer for the Gods: The Scopes Trial and America's Continuing Debate over Science and Religion*. Cambridge: Harvard University Press.
———. 2003. *Trial and Error: The American Controversy over Creation and Evolution*. 3rd ed. New York, N.Y.: Oxford University Press.

———. 2006 [2004]. *Evolution: The Remarkable History of a Scientific Theory*. New York: The Modern Library.
Layman, Geoffrey C. 2001. *The Great Divide : Religious and Cultural Conflict in American Party Politics*. New York: Columbia University Press.
Le Clercq, Frederic S. 1974. "The Constitution and Creationism." *The American Biology Teacher* 36 (March): 139-145.
Lewin, Roger. 1981. "Creationism Goes on Trial in Arkansas." *Science* 214 (December 4): 1101-1102, 1104.
———. 1982a. "Creationism on the Defensive in Arkansas." *Science* 215 (January 1): 33-34.
———. 1982b. "Where Is the Science in Creation Science?" *Science* 215 (January 8): 142-144, 146.
———. 1982c. "Judge's Ruling Hits Hard at Creationism." *Science* 215 (January 22): 381-382, 384.
———. 1982d. "A Tale with Many Connections." *Science* 215 (January 29): 484-487.
———. 1982e. "ACLU 2, Creationists 0." *Science* 218 (December 10): 1099.
———. 1983. "Creationists, ACLU to Do Battle Again." *Science* 222 (November 4): 488.
———. 1984a. "Creationism Defeated in Louisiana Senate." *Science* 224 (June 8): 1079.
———. 1984b. "Creationism Survives in Louisiana Legislature." *Science* 225 (July 6): 36.
———. 1985. "Louisiana Judge Voids Creationism Law." *Science* 227 (January 25): 395.
———. 1986. "Creationism Downed Again in Louisiana." *Science* 231 (January 10): 112.
———. 1987. "Creationism Case Goes before Supreme Court." *Science* 235 (January 2): 22-23.
Lieberman, Robert C. 2002. "Ideas, Institutions, and Political Order: Explaining Political Change." *The American Political Science Review* 96 (December): 697-712.
Lienesch, Michael. 1993. *Redeeming America: Piety and Politics in the New Christian Right*. Chapel Hill and London: University of North Carolina Press.
———. 2007. *In the Beginning: Fundamentalism, the Scopes Trial, and the Making of the Antievolution Movement*. Chapel Hill: The University of North Carolina Press.
Lucas, E.C., Ginna Oscuro, John H. More, D.E. Martz, J.M. Burgers, William J. Tinkle, and R.E. Taylor. 1973. "Creationism and Evolution." *Science* 179 (March 9): 953-954, 956.
Marsden, George M. 2006. *Fundamentalism and American Culture*. 2nd ed. Oxford & New York: Oxford University Press.
Mayer, William V. 1967. "Biology for the 21st Century." *The American Biology Teacher* 29 (May): 356-361.
———. 1971. "Evolution vs. Special Creation." *The American Biology Teacher* 33 (January): 49-51.
———. 1973. "Evolution and the Law." *The American Biology Teacher* 35 (March): 144-145, 162.
———. 1974. "Creationism: A Masquerade." *The American Biology Teacher* 36 (April): 245-246.
———. 1981. "Through the Looking Glass in Colorado." *The American Biology Teacher* 43 (September): 331-332, 340.
———. 1986. "Biology Education in the United States During the Twentieth Century." *The Quarterly Review of Biology* 61 (December): 481-507.
Mayer, William V., Richard J. Merrill, G. Ledyard Stebbins, Claude A. Welch, and David H. Ost. 1972. "Statements by Scientists in the California Textbook Dispute." *The American Biology Teacher* 34 (October): 411-415.

Mayr, Ernst. 1971. “Evolution vs. Special Creation.” *The American Biology Teacher* 33 (January): 49-51.
McAdam, Doug. 1982. *Political Process and the Development of Black Insurgency, 1930-1970*. Chicago: University of Chicago Press.
McCarthy, John D., and Mayer N. Zald. 1977. “Resource Mobilization and Social Movements: A Partial Theory.” *The American Journal of Sociology* 82 (May): 1212-1241.
McFarland, Andrew S. 2004. *Neopluralism: The Evolution of Political Process Theory*. Lawrence: University Press of Kansas.
Meyer, David S. 2005. “Social Movements and Public Policy: Eggs, Chicken, and Theory.” In *Routing the Opposition: Social Movements, Public Policy, and Democracy*, ed. D. S. Meyer, V. Jenness and H. Ingram. Minneapolis: University of Minnesota Press.
Meyer, David S., and Suzanne Staggenborg. 1996. “Movements, Countermovements, and the Structure of Political Opportunity.” *American Journal of Sociology* 101 (May): 1628-1660.
Meyer, John W., and Brian Rowan. 1977. “Institutionalized Organizations: Formal Structure as Myth and Ceremony.” *American Journal of Sociology* 83 (September): 340-363.
Moe, Terry M. 1981. “Toward a Broader View of Interest Groups.” *The Journal of Politics* 43 (May): 531-543.
Moen, Matthew C. 1990. “Ronald Reagan and the Social Issues: Rhetorical Support for the Christian Right.” *The Social Science Journal* 27: 199-207.
———. 1992. *The Transformation of the Christian Right*. Tuscaloosa: University of Alabama Press.
———. 1994. “From Revolution to Evolution: The Changing Nature of the Christian Right.” *Sociology of Religion* 55: 345-357.
———. 1996. “The Evolving Politics of the Christian Right.” *PS: Political Science and Politics* 29 (Sep.): 461-464.
Moore, John A. 1974. “Creationism in California.” *Daedalus* 103 (Summer): 173-189.
Moore, John N., and Duane T. Gish. 1974. “Creationists Reply to Cory Article.” *The American Biology Teacher* 36 (January): 48-50.
Moore, Randy. 1998. “Creationism in the United States: III. The Ban on the Teaching of Evolution Reaches the U.S. Supreme Court.” *The American Biology Teacher* 60 (Nov.-Dec.): 650-661.
———. 1999a. “Creationism in the United States: IV. The Aftermath of Epperson v. Arkansas.” *The American Biology Teacher* 61 (January): 10-16.
———. 1999b. “Creationism in the United States: V. The McLean Decision Destroys the Credibility of 'Creation Science'.” *The American Biology Teacher* 61 (February): 92-101.
———. 1999c. “Creationism in the United States: VI. Demanding 'Balanced Treatment'.” *The American Biology Teacher* 61 (March): 175-180.
Morone, James A. 2003. *Hellfire Nation: The Politics of Sin in American History*. New Haven & London: Yale University Press.
Morris, Henry M. 1993 [1984]. *History of Modern Creationism*. Santee, Calif.: Institute for Creation Research.
Moyer, Wayne A. 1980. “The Problem Won't Go Away.” *BioScience* 30 (March): 147.
Nagle, John Copeland. 2008. “The Evangelical Debate over Climate Change.” *University of St. Thomas Law Journal* 5: 53-86.

National Association of Biology Teachers. 1973. “Resolutions of Learned Societies in the Textbook Controversy.” *The American Biology Teacher* 35 (January): 35-36.
National Center for Science Education. 1981a. “New Creationist Bills, Resolutions, and Court Cases Appear Nationwide.” *Creation/Evolution Journal* 2 (Spring): 27-34.
———. 1981b. “News Briefs from the Editor.” *Creation/Evolution Journal* 2 (Summer): 33-38.
———. 1981c. “Update on Creation Bills and Resolutions.” *Creation/Evolution Journal* 2 (Winter): 45.
National Science Foundation. 1952. “The Second Annual Report of the National Science Foundation: Fiscal Year 1952.” Washington: U.S. Government Printing Office.
———. 1953. “The Third Annual Report of the National Science Foundation: Year Ending June 30,1953.” Washington: U.S. Government Printing Office.
———. 1956. “Sixth Annual Report for the Fiscal Year Ended June 30, 1956.” Washington: U.S. Government Printing Office.
———. 1958. “Eighth Annual Report for the Fiscal Year Ended June 30, 1958.” Washington: U.S. Government Printing Office.
———. 1959. “Ninth Annual Report for the Fiscal Year Ended June 30, 1959.” Washington: U.S. Government Printing Office.
———. 1960. “Tenth Annual Report for the Fiscal Year Ended June 30, 1960.” Washington: U.S. Government Printing Office.
———. 1964. “Fourteenth Annual Report for the Fiscal Year Ended June 30, 1964.” Washington: U.S Government Printing Office.
Nelkin, Dorothy. 1977. *Science Textbook Controversies and the Politics of Equal Time*. Cambridge, Mass.: The MIT Press.
———. 2000. *The Creation Controversy: Science or Scripture in the Schools*. San Jose, CA: toExcel Press.
Norman, Colin. 1986a. “Creationism Case Goes to Supreme Court.” *Science* 232 (May 23): 928.
———. 1986b. “Nobelists Unite against 'Creation Science'.” *Science* 233 (August 29): 935.
———. 1987. “Supreme Court Strikes Down 'Creation Science' Law as Promotion of Religion.” *Science* 236 (June 26): 1620.
Numbers, Ronald L. 1986. “The Creationists.” In *God and Nature: Historical Essays on the Encounter between Christianity and Science*, ed. D. C. Lindberg and R. L. Numbers. Berkeley & Los Angeles: University of California Press.
———. 1998. *Darwinism Comes to America*. Cambridge, Mass.: Harvard University Press.
———. 2006. *The Creationists: From Scientific Creationism to Intelligent Design*. Expanded ed. Cambridge, Mass.: Harvard University Press.
———. 2007. *Science and Christianity in Pulpit and Pew*. Oxford: Oxford University Press.
O'Connor, Karen, and Greg Ivers. 1988. “Creationism, Evolution, and the Courts.” *PS: Political Science and Politics* 21 (Winter): 10-17.
Oldfield, Duane M. 1996. *The Right and the Righteous: The Christian Right Confonts the Republican Party*. Lanham, MD: Rowman & Littlefield Publishers, Inc.
Olson, Mancur. 1965. *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge, Mass.: Harvard University Press.
Orren, Karen, and Stephen Skowronek. 2004. *The Search for American Political Development*. Cambridge, UK ; New York: Cambridge University Press.
Park, Hee-Joo. 2000. “The Politics of Anti-Creationism: The Committees of Correspondence.” *Journal of History of Biology* 33: 349-370.

Patashnik, Eric M. 2003. “After the Public Interest Prevails: The Political Sustainability of Policy Reform.” *Governance* 16: 203-234.
———. 2008. *Reforms at Risk: What Happens after Major Policy Changes Are Enacted*. Princeton: Princeton University Press.
Peter, Walter G., III. 1970. “Fundamentalist Scientists Oppose Darwinian Evolution.” *BioScience* 20 (October 1): 1067-1069.
Pfeffer, Jeffrey. 1981. *Power in Organizations*. Marshfield, Mass.: Pittman.
Pfeffer, Jeffrey, and Gerald R. Salancik. 1978. *The External Control of Organizations*. New York: Harper & Row.
Pierson, Paul. 1993. “When Effect Becomes Cause: Policy Feedback and Political Change.” *World Politics* 45 (July): 595-628.
———. 2000a. “Not Just What, but *When*: Timing and Sequence in Political Processes.” *Studies in American Political Development* 14 (Spring): 72-92.
———. 2000b. “Dr. Seuss and Dr. Stinchcombe: A Reply to the Commentaries.” *Studies in American Political Development* 14 (Spring): 113-119.
———. 2000c. “Path Dependence, Increasing Returns, and Political Science.” *The American Political Science Review* 94 (June): 251-267.
———. 2003. “Big, Slow-Moving, And...Invisible: Macrosocial Processes in the Study of Comparative Politics.” In *Comparative Historical Analysis in the Social Sciences*, ed. J. Mahoney and D. Rueschemeyer. Cambridge: Cambridge University Press.
———. 2004. *Politics in Time: History, Institutions, and Social Analysis*. Princeton: Princeton University Press.
———. 2005. “The Study of Policy Development.” *The Journal of Policy History* 17 (January): 37-56.
Pipho, Chris. 1981. “Scientific Creationism: A Case Study.” *Education and Urban Society* 13 (February): 219-233.
Polsby, Nelson W. 1980 [1963]. *Community Power and Political Theory*. 2nd ed. New Haven and London: Yale University Press.
Powell, Walter. 1990. “Neither Market nor Hierarchy: Network Forms of Organization.” *Research in Organizational Behavior* 12: 295-336.
Quinley, Harold E. 1974. “The Dilemma of an Activist Church: Protestant Religion in the Sixties and Seventies.” *Journal for the Scientific Study of Religion* 13 (March): 1-21.
Raloff, Janet. 1982a. “Of God and Darwin.” *Science News* 121 (January 2): 12-13.
———. 1982b. “'Creation-Science' Law Is Struck Down.” *Science News* 121 (January 9): 20.
Riddle, Oscar. 1959. “Crucial Competition with Russia in Science Education.” *The American Biology Teacher* 21 (May): 179-184.
Robinson, James T. 1971. “Incommensurability of Evolution and Special Creation.” *The American Biology Teacher* 33 (December): 535-538, 545.
Rudolph, John L. 2002. *Scientists in the Classroom: The Cold War Reconstruction of American Science Education*. New York: PALGRAVE.
Sabatier, Paul, and Hank C. Jenkins-Smith. 1999. “The Advocacy Coalition Framework: An Assessment.” In *Theories of the Policy Process*, ed. P. Sabatier. Boulder: Westview Press.
Savage, Robert L. 1985. “Diffusion Research Traditions and the Spread of Policy Innovations in a Federal System.” *Publius: The Journal of Federalism* 15 (Fall): 1-28.
Schattschneider, E. E. 1935. *Politics, Pressures, and the Tariff*. New York: Prentice Hall.

———. 1960. *The Semisovereign People: A Realist's View of Democracy in America*. 1st ed. New York,: Holt Rinehart and Winston.
Schweinsberg, John. 1981. "The Alabama Creation Battle." *Creation/Evolution Journal* 2 (Summer): 31-32.
Scott, Eugenie C. 1997. "Antievolution and Creationism in the United States." *Annual Review of Anthopology* 26: 263-289.
Scott, Eugenie C., and Henry P. Cole. 1985. "The Elusive Scientific Basis of Creation 'Science'." *The Quarterly Review of Biology* 60 (March): 21-30.
Simon, Herbert A. 1997 [1945]. *Administrative Behavior: A Study of Decision-Making Processes in Administrative Organizations*. 4th ed. New York: The Free Press.
Skoog, Gerald. 2005. "The Coverage of Human Evolution in High School Biology Textbooks in the 20th Century and in Current State Science Standards." *Science & Education* 14: 395-422.
Smith, Bruce L. R. 1990. *American Science Policy since World War II*. Washington, DC: The Brookings Institution.
Smith, Christian. 2003a. "Rethinking the Secularization of American Public Life." In *The Secular Revolution: Power, Interests, and Conflict in the Secularization of American Public Life*, ed. C. Smith. Berkeley & Los Angeles: University of California Press.
———, ed. 2003b. *The Secular Revolution: Power, Interests, and Conflict in the Secularization of American Public Life*. Berkeley & Los Angeles: University of California Press.
Smith, R. Jeffrey. 1982. "Arkansas Declines Appeal of Ruling on Creationism." *Science* 215 (February 19): 949.
Smith, Tom W., Peter Marsden, Hout Michael, and Jibum Kim. 2011. "General Social Surveys, 1972-2010 [Machine-Readable Data File]." ed. NORC. Chicago: National Opinion Research Center [producer].
Snow, David A., E. Burke Rochford, Jr., Steven K. Worden, and Robert D. Benford. 1986. "Frame Alignment Processes, Micromobilization, and Movement Participation." *American Sociological Review* 51 (August): 464-481.
Society for Science and the Public. 1965. "Arkansas Evolution Suit Recalls Scopes Trial." *The Science News Letter* 88 (December 18): 386.
———. 1966. "Evolution Case Still Undecided." *Science News* 89 (April 16): 262.
———. 1967. "Anti-Evolution Upheld." *Science News* 91 (June 17): 569-570.
———. 1968. "Evolution Reaches Highest Court." *Science News* 94 (November 2): 440-441.
Sonleitner, Frank J. 1981. "Creationists Embarrassed in Oklahoma." *Creation/Evolution Journal* 2 (Spring): 23-27.
Soule, Sarah A. 2004. "Going to the Chapel? Same-Sex Marriage Bans in the United States, 1973-2000." *Social Problems* 51: 453-477.
Soule, Sarah A., and Susan Olzak. 2004. "When Do Movements Matter? The Politics of Contingency and the Equal Rights Amendment." *American Sociological Review* 69 (August): 473-497.
Stinnett, T. M., and Clara B. Kennan. 1969. *All This and Tomorrow Too: The Evolving and Continuing History of the Arkansas Education Association -- a Century and Beyond*. Little Rock: The Arkansas Education Association.
Strickberger, Monroe W. 1973. "Evolution and Religion." *BioScience* 23 (July): 417-421.
Szasz, Ferenc Morton. 1982. *The Divided Mind of Protestant America, 1880-1930*. University, Ala.: University of Alabama Press.

Thelen, Kathleen. 2000. “Timing and Temporality in the Analysis of Institutional Evolution and Change.” *Studies in American Political Development* 14 (Spring): 101-108.
Thomas, George M., Lisa R. Peck, and Channin G. De Haan. 2003. “Reforming Education, Transforming Religion, 1876-1931.” In *The Secular Revolution: Power, Interests, and Conflict in the Secularization of American Public Life*, ed. C. Smith. Berkeley: University of California Press.
Thompson, James D. 1967. *Organizations in Action: Social Science Bases of Administrative Theory*. New York: McGraw-Hill.
Tocqueville, Alexis de. 2000 [1850]. *Democracy in America*. Translated by G. Lawrence. Edited by J. P. Mayer. 1st Perennial Classics ed. New York: Perennial Classics.
Tomkins, Jerry. 1966a. “Anti-Evolution Law Tested.” *The Science News Letter* 89 (January 1): 7, 11.
———. 1966b. “'Monkey' Law Unconstitutional.” *Science News* 89 (June 11): 461.
Toumey, Christopher P. 1994. *God's Own Scientists: Creationists in a Secular World*. New Brunswick, NJ: Rutgers University Press.
Truman, David B. 1971 [1951]. *The Governmental Process: Political Interests and Public Opinion*. 2nd ed. Berkeley: Institute of Governmental Studies, University of California at Berkeley.
Turnage, Mike. 1971. “More Comments on Special Creation.” *The American Biology Teacher* 33 (May): 303.
Van Dyke, Fred, David C. Mahan, Joseph K. Sheldon, and Raymond H. Brand. 1996. *Redeeming Creation: The Biblical Basis for Environmental Stewardship*. Downers Grove, Illinois: Intervarsity Press.
Wade, Nicholas. 1972. “Creationists and Evolutionists: Confrontation in California.” *Science* 178 (November 17): 724-729.
Wald, Kenneth D. 2003. *Religion and Politics in the United States*. 4th ed. Lanham, Md.: Rowman & Littlefield Publishers.
Wald, Kenneth D., Dennis E. Owen, and Samuel S. Hill, Jr. 1988. “Churches as Political Communities.” *The American Political Science Review* 82 (June): 531-548.
Wald, Kenneth, Adam L. Silverman, and Kevin S. Fridy. 2005. “Making Sense of Religion in Political Life.” *Annual Review of Political Science* 8 (June): 121-143.
Walker, Jack L. 1969. “The Diffusion of Innovations among the American States.” *American Political Science Review* 63 (September): 880-899.
Walker, Jr., Jack L. 1991. *Mobilizing Interest Groups in America: Patrons, Professions, and Social Movements*. Ann Arbor: The University of Michigan Press.
Warner, R. Stephen. 1993. “Work in Progress toward a New Paradigm for the Sociological Study of Religion in the United States.” *The American Journal of Sociology* 98 (March): 1044-1093.
Weinberg, Stanley L. 1978. “Two Views on the Textbook Watchers.” *The American Biology Teacher* 40 (December): 541-545, 560.
———. 1980. “Reactions to Creationism in Iowa.” *Creation/Evolution Journal* 1 (Fall): 1-8.
———. 1982. “Pro-Evolution Public Interest.” *BioScience* 32 (March): 168.
Weir, Margaret. 2006. “When Does Politics Create Policy? The Organizational Politics of Change.” In *Rethinking Political Institutions: The Art of the State*, ed. I. Shapiro, S. Skowronek and D. Galvin. New York: NYU Press.
Weisskopf, Victor F. 1972. “The Significance of Science.” *Science* 176 (April 14): 138-146.

Wenner, Adrian M. 1973. “Adam and Eve in Science.” *The American Biology Teacher* 35 (May): 278-279.
White, Lynn, Jr. 1967. “The Historical Roots of Our Ecologic Crisis.” *Science* 155 (March): 1203-1207.
Wilcox, Clyde, and Carin Larson. 2006. *Onward Christian Soldiers? The Religious Right in American Politics*. 3rd ed. Boulder, Colo.: Westview Press.
Wilhelm, Richard David. 1978. “A Chronology and Analysis of Regulatory Actions Relating to the Teaching of Evolution in Public Schools.” Ph.D. diss., The University of Texas at Austin.
Wilson, James Q. 1973. *Political Organizations*. New York: Basic Books, Inc.
Wing, Frank. 1971. “More Comments on Special Creation.” *The American Biology Teacher* 33 (May): 301-302.
Wood, James E. 1986. “Editorial: The Battle over the Public School.” *Journal of Church and State* 28 (Winter): 5-13.
Wood, Richard L. 1999. “Religious Culture and Political Action.” *Sociological Theory* 17 (November): 307-332.
Wuthnow, Robert. 1988. *The Restructuring of American Religion : Society and Faith since World War II*. Princeton, N.J.: Princeton University Press.
Zald, Mayer N., and John D. McCarthy. 1987. “Religious Groups as Crucibles of Social Movements.” In *Social Movements in an Organizational Society*, ed. M. N. Zald and J. D. McCarthy. New Brunswick, NJ: Transaction Books.
Zald, Mayer N., and Bert Useem. 1987. “Movement and Countermovement Interaction: Mobilization, Tactics, and State Involvement.” In *Social Movements in an Organizational Society*, ed. M. N. Zald and J. D. McCarthy. New Brunswick, NJ: Transaction Books.
Zimmerman, Michael. 1987. “Keep Guard up after Evolution Victory.” *BioScience* 37 (October): 636.

APPENDIX

Gallup Question Wording in Figure 10

1982: The Gallup Poll #198G
Which of these three statements COMES CLOSEST to describing your views about the origin and development of man – God created man pretty much in his present form at one time within the last 10 thousand years; Man has developed over millions of years from less advanced forms of life. God had no part in this process; or Man has developed over millions of years from less advanced forms of life, but God guided this process, including man's creation?

1991: November Wave 4
After I read off three statements, please tell me which ONE comes closest to describing your views about the origin and development of man -- God created man pretty much in his present form at one time within the last 10,000 years; Man has developed over millions of years from less advanced forms of life. God had no part in this process; or Man has developed over millions of years from less advanced forms of life, but God guided this process, including man's creation?

1993: June
[Note the change from "Man" to "Human beings"]
And which of the following statements comes closest to your views on the origin and development of human beings – Human beings have developed over millions of years from less advanced forms of life, but God guided this process; Human beings have developed over millions of years from less advanced forms of life. God had NO PART in this process; God created human beings pretty much in their present form at one time within the last 10,000 years or so?

1997: November Wave 1
Which of the following statements comes closest to your views on the origin and development of human beings – Human beings have developed over millions of years from less advanced forms of life, but God guided this process; human beings have developed over millions of years from less advanced forms of life, but God had NO PART in this process; or God created human beings pretty much in their present form at one time within the last 10,000 years or so?

1999: Gallup Poll Social Series, Labor and Education
Same as 1997

2001: February Wave 2
Same as 1997

2004: Gallup Poll Social Series, Health and Health Care
Same as 1997

2005: September Wave 1
[Note the word change from "developed" to "evolved"; this survey also mentions the Bible for the first time]

Which of the following statements comes closes to your views on the origin and development of human beings – Human beings have evolved over millions of years from other forms of life and God guided this process, Human beings have evolved over millions of years from other forms of life, but God had NO PART in this process, or God created human beings in their present form exactly the way the Bible describes it.

2006: May 8-May 11
[Note that this question reverts back to the 1997 wording]
Which of the following statements comes closest to your views on the origin and development of human beings?...Human beings have developed over millions of years from less advanced forms of life, but God guided this process. Human beings have developed over millions of years from less advanced forms of life, but God had no part in this process. God created human beings pretty much in their present form at one time within the last 10,000 years or so.

2007: May 10-May 13
Same as 2006

2008: May 8-May 11
Same as 2006

2010: December 10-December 12
Same as 2006