Issue-Definition and Policy Change
Capital Punishment and the Rise of the "Innocence Frame," 1960–2003

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Abstract

Media framing is an established force in the political science literature, one repeatedly shown to influence public attitudes. Framing also affects policy outcomes, of course, and we demonstrate these effects in the case of the death penalty using a maximum likelihood Error Correction Model predicting the number of death sentences annually on the basis of homicides, media framing, and other factors. Our framing measure comes from a comprehensive content analysis of *New York Times* coverage of capital punishment since 1960. Most notably, we document the rise of the powerful new "innocence" argument that has revolutionized the debate and led to the reversal of a trend toward greater death penalty application; since the rise of this frame the number of death sentences has decreased by over one-half. The annual number of death sentences is strongly linked to changing issue-definitions surrounding capital punishment—more so even than to homicides.

Introduction

Framing matters, as empirical research has shown. Scholars have demonstrated that the way an issue is defined, or framed, powerfully affects the audience's perception of the issue (Druckman 2001, Jacoby 2000, Nelson et al. 1997a and b, Nelson and Oxley 1999, Pollock 1994, Terkildsen and Schnell 1997, Tversky and Kahneman 1986). The link between framing and public policy is also strong, as various scholars have shown. In their analysis of pesticides and nuclear power, Baumgartner and Jones (1993) offered systematic illustrations of how shifts in media framing tracked with shifts in public policy on these issues. Schneider and Ingram (1993) focused on target populations; Riker (1986) discussed the role of framing in constructing legislative coalitions. Here, we offer statistical evidence in the case of the death penalty that supports these earlier findings and ideas. In contrast to previous studies, we develop a statistical model of the impact of framing on a clearly defined policy outcome—the annual number of death sentences in America—and we demonstrate strong effects even while controlling for other relevant factors.

In this article we follow the recent history of the capital punishment debate with an emphasis on framing and we demonstrate the tight linkages between framing and public policy outcomes. In the political science literature on framing and policy outcomes, it is often difficult to measure policy outcomes clearly, but not here. The number of individuals sentenced to death in a given year is a strong indicator of policy, and it is measured perfectly through publicly available sources. We demonstrate statistically that this number is more strongly associated with changing issue-definitions than with underlying levels of criminality. This is true both of the period during which increasing numbers of people were sentenced to death and during the recent period when the numbers have been declining.

We present several types of results. To begin, we show uncontestable evidence that public discussion of the death penalty has been altered by a new and unprecedented focus on the possibility of errors in the system, an eventuality with which no one is comfortable. The "innocence frame" has resonated more than previous arguments, bringing together a cluster of previously existing, but distinct, arguments into a single frame likely to have greater effect on public discourse than the same arguments considered separately. We develop some new techniques of dynamic content analysis to show the various changes that have occurred in elite-level issue-definition surrounding this issue. Attention has focused on different dimensions of the debate during different historical periods. Through a comprehensive analysis of the content of over 3,600 stories relating to the death penalty in the past 45 years, we trace these substantive shifts in the nature of the debate. We develop new techniques to trace the dynamics of issue-framing. And we demonstrate the unprecedented power of the new "innocence" frame.

Finally and most importantly, we link shifting frames of media discussion of the death penalty to actual results. We present a statistical model explaining the number of death sentences annually and show the dramatic impact of the rise of the innocence frame, even controlling for other factors such as previous levels of sentencing, the number of homicides, and the number of states with capital punishment. A decline of approximately 175 capital sentences annually can be associated with the framing effects that we document here.

A Theory of Dynamic Framing and a Method of Measurement

Many have noted the importance of framing and issue-definition on public policy. From Schattschneider (1960) to Cobb and Elder (1972) to Kingdon (1984) to Baumgartner and Jones (1993) such a focus has been a staple in studies of agenda-setting. Baumgartner and Jones were the most systematic in tracing the level and tone of news coverage to particular issues over time.

They showed for example that news coverage toward the pesticides and nuclear industries was sometimes overwhelmingly positive, but later switched to be overwhelmingly negative. Public policy, they argued, was closely related to these shifting foci of public discussion—where there were "waves of enthusiasm," government actions supported the development of the industry; where "waves of criticism" were apparent, officials attacked and regulated those same industries (Baumgartner and Jones 1993, 84). "Good news" and "bad news" have policy consequences.

Policy issues are much more complex than only positive and negative, good and bad, or any other single dimension; more recently the focus in the empirical study of issue-definition has moved to the analysis of how multidimensional issues are simplified in public debate so that only a few dimensions are the object of significant discussion. The multidimensional nature of policy debates has been the object of attention from dozens of scholars ranging from Riker (1983, 1984, 1986, 1988, 1996) to Schneider and Ingram (1993) to Stone (1988, 1989) to Poole and Rosenthal (1991), who note that no matter how complex the underlying set of issues, congressional responses can be arrayed along one or two dimensions. Bryan Jones discussed these issues in some detail in developing a model of decision-making based on multidimensional choice (2001). In their most recent work Jones and Baumgartner (2005) have developed a model focusing on the implications of bounded rationality and the implications of "attention-shifting." This is when individuals or organizations move their focus from one dimension of a debate to another. They argue that attention-shifts are inevitable in any complex decision-making environment and that these shifts explain the punctuated-equilibrium nature of public policy response. Most policies, most of the time, follow a strongly inertial, status-quo oriented track, but are occasionally up-ended through fundamental reconsiderations of how to approach the issue: attention-shifts. We

believe that the death penalty may be undergoing such a transformation at this time, and hence we study it in considerable detail here.

The death penalty itself is the object of a voluminous literature and we do not propose a comprehensive analysis of the topic (see Banner 2002 for an excellent recent overview; see also Bedau 1997, Haines 1996, Jost 2001). We focus here on demonstrating quantitatively the important shifts in attention that have occurred in media coverage of the death penalty, the impact of these shifts on the overall tone of coverage, and finally the impact of the tone of discussion on public policy outcomes. We begin with a simple content analysis of *New York Times* coverage of the topic since 1960.[1] Our comprehensive coding system allows us to go into much greater detail than others have done before to show the shifting topics of public attention, and we show how feasible it is to incorporate multi-dimensional coding into content analysis.

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[1] We use the *New York Times* index because the *Times* represents the closest we can find to a single national source for public policy stories. Our main interest is in how coverage shifts over time, so we are less concerned with how the *Times* may differ from other newspapers in its editorial stance on the death penalty or coverage of the issue; the key question is how coverage changes over time. To test the robustness of our findings using the *Times*, we also reviewed coverage in the *Readers' Guide to Periodical Literature*. Although there is only a partial correlation of .53 between the two series overall (1960-2003), both show the same dramatic rise in attention in recent years coinciding with the rise in the innocence frame. In the year 2000, both the *Times* and the *Readers' Guide* printed a higher number of articles—235 and 106, respectively—than in any previous year, both dominated by arguments against the death penalty. On the use of the *New York Times* as an indicator of media coverage, see Woolley 2000; Althaus, Edy, and Phalen 2001; Soroka 2002.

Further, we develop a new statistical method, *evolutionary factor analysis* to measure the strength and resonance of emerging issue-definitions. This allows us to distinguish among arguments that are isolated or short-lived versus those that resonate with others, last a long time, and therefore have the potential to have a major impact on the debate. In other words, evolutionary factor analysis gives us a sharper assessment of the potency of the new innocence frame as compared to previous definitions. The techniques we develop for the case of the death penalty may be widely applicable and may help move the literature on issue-definition forward in important ways.

Media coverage of the Death Penalty

The death penalty has long been understood and discussed in the media in terms of constitutionality and morality. Since the mid-1990s, however, a new issue-definition has arisen, and dramatically. This is the "innocence" frame, or the idea that no matter what one thinks about the morality of capital punishment, we should ask whether the justice system is capable of administering the penalty across thousands of individual judicial proceedings with no errors. The idea of flaws in the system, of innocent people being on death row, of the wrong people possibly being executed, has transformed the debate. In 1996 thirty articles appeared in the *New York Times* concerning capital punishment; the bulk of these reported opinions, news, or events leading toward the application of the death penalty. In 2000, 235 articles appeared and the overwhelming majority of them were critical. In just a few short years, the issue was reframed to focus on errors, mistakes, and the possibility of executing the wrong person.

Figure 1 shows the number of stories in the *New York Times* relating to capital

punishment from 1960 to 2003.[2]

(Insert Figure 1 about here)

A total of 3,692 stories appeared during this time, with substantial peaks of coverage in 1976–77, just after the Supreme Court reinstated the death penalty after the 1972 decision invalidating state capital punishment laws, and then again in 2000. During these two periods, the newspaper carried over 150 articles per year: More than one story every other day. The figure makes clear that the issue emerged onto the media agenda in the 1970s; there was little coverage, less than one article per week, before 1972. Coverage has grown substantially in recent years even though there has been no monumental Supreme Court decision such as those of 1972 and 1976. Rather, more recent coverage, especially that peaking in the unprecedented levels of coverage in 2000, has related to various challenges to the system based on juvenile offenders, the mentally handicapped, and the concept of "innocence." The number of front-page stories has grown as well: From just one in 1960, there were two in 1970, four in 1980, eight in 1990, and 19 in 2000.

Capital punishment raises many different dimensions of debate, from constitutionality to morality to efficacy and others. We coded each story for the presence of a comprehensive list of 67 different arguments, clustered into seven main themes or dimensions. We will show in this section how the component arguments have waxed and waned over time, how the topic of

[2] We coded every abstract listed under the heading "capital punishment," noting whether or not the abstract mentioned any of an exhaustive list of 67 different arguments. Thanks to Cheryl Feeley for doing the bulk of this work for her Senior Thesis and for allowing us to use and update the data she collected. See Baumgartner and Boydstun 2005 for a description of the coding process.

discussion is systematically related to the tone of the debate, and how the tone of the debate has shifted in response to the shifting topics of discussion. We begin in Figure 2 with a simple presentation of the number of stories mentioning the most prevalent arguments.

(Insert Figure 2 about here)

Issues of constitutionality are the single most common theme in *New York Times* coverage over most of this period; over 1,320 articles mentioned discussions of this type, with peaks coming in 1972, 1976 and the years following that, in the mid- to late-1980s, and finally in the early 21st century as the constitutionality of capital punishment for juveniles and the mentally handicapped became important controversies. Morality issues have been less prominent over time, with a total of 574 stories focusing on these. Discussion of morality has been prominent since 1972, especially from 1972 to 1978 when the constitutionality of the entire death penalty was hotly debated. Since then moral issues have never completely disappeared from the media agenda, but they have been significantly less prevalent. The innocence or fairness dimension was not prominent before the 1980s, but grew rapidly beginning in 1983. It reached a peak in 2000 with 134 stories in that year alone; over the entire period there were 970 stories with innocence / fairness arguments. Many stories fit into other categories focusing on international comparisons, efficacy (whether the penalty serves as a deterrent or not, for example), cost, mode of execution, or "other" topics. None of these categories was used in more than 220 stories across the entire period, except the "other" category that was used over 1,200 times. These were miscellaneous mentions of various particularities of the cases or otherwise did not fit into any particular theme. In general, we can see from Figure 2 that constitutionality is a perennial theme; that morality has been an important theme as well; and that innocence has shown a dramatic

increase from virtually no coverage before the 1980s to constituting more than half of the entire amount of coverage annually in many recent years.

Some topics, such as the heinousness of a crime, are almost always associated with an overall pro-death penalty theme of coverage. Others, such as international comparisons, lead almost always to an anti-death penalty story. In fact, knowing the topic of the story allows us to predict the tone, as Table 1 shows.

(Insert Table 1 about here)

Stories mentioning morality issues may mention arguments on either side of the death-penalty debate, of course. These stories in fact are quite evenly split between pro- and anti-death penalty tones. Similarly, stories mentioning constitutionality questions may focus on issues favoring the defendant or those favoring the state; here too the tone is quite split (though with a net anti-death penalty tendency of 46 to 35 percent). When the topic shifts to fairness, however, the vast majority of the coded articles are anti-death penalty. International comparisons, while less common, similarly have a powerful anti-death penalty bias. The various tendencies present in Table 1 make clear that the shifting attention to various topics that we demonstrated in Figure 2 can be expected to relate to powerful changes in the overall tone over time.

We noted whether the abstract mentioned anything about the victim(s) or the defendant and Table 2 shows that this simple question goes far in determining the overall tone of the article.

(Insert Table 2 about here)

Most articles mention neither a victim nor a defendant, discussing such things as the implications of Supreme Court decisions in general or state legislative debates about revising capital punishment laws and procedures. Among those cases that mention neither a victim nor a

defendant, roughly 32 percent have a pro-death penalty tone, 45 an anti-death penalty tone, with about 23 percent balanced or uncodeable. Over 530 stories mentioned something about the victim with no discussion of the defendant; among this group 64 percent had a pro-death penalty tone. Similarly, 341 stories mentioned something about the defendant without mentioning the victim, and among these only 18 percent were coded pro-death penalty. Those stories that mentioned both the victim and the defendant were similar to the stories mentioning neither in their overall tone. Clearly, something about discussing the defendant can be said to humanize him or her, or is associated with discussions about imperfections or problems in the trial. Similarly, a focus on the victims of crime typically is related to pro-death penalty stories, explaining for example the heinous nature of the crime itself.[3] The subject matter of the article goes far in determining the tone, and as we will see the subjects of attention change over time. In Figure 3 we trace relative attention to the victim and the defendant since 1960.

(Insert Figure 3 about here)

Figure 3 shows the increased discussion of the victims of capital crimes during the 1970s (associated with significantly more pro-death penalty discussion in general during that time), some decline in these numbers after the reinstatement of the death penalty in 1976, a steady rise

[3] Contrary to some common expectations, *what* the article mentioned about the victims, including whether they were police officers, women, children, or if there were multiple victims had no significant impact on the tone of the article overall; *any* discussion of the victim was related to a pro-death penalty tone overall. Similarly, there were few differences across types of defendants: be they female, of various racial categories, etc. However, if the defendant was characterized as a terrorist, the tone was more likely to be pro-death penalty. There were few such cases, however, as a proportion of the total.

in attention to the victims of crime in discussions of death-penalty issues until 1993, and then a dramatic and sustained reversal after that date. Since 1993, attention has increasingly focused on questions relating to the defendants in criminal trials rather than to victims. This of course is strongly associated with the increased concern with "innocence" and the fairness and accuracy of judicial proceedings. Combined, the data in Table 2 and Figure 3 make clear why proponents and opponents of the death penalty have different foci. While certainly not all of those close to the victims of violent crime support the death penalty, attention to victims is clearly associated with more stories favorable to the application of the death penalty. Again, we see that topic of discussion determines the tone.

We continue our detailed analysis of the shifting subject matter of media discussion of capital punishment with a new methodology for evolutionary factor analysis (Baumgartner, De Boef, and Boydstun 2004). Breaking the data into moving five-year intervals, we performed a factor analysis on the annual counts for each of the 67 arguments we identified. For each five-year period, the analysis showed which arguments moved together. Of course, with only a five-year window, there is considerable noise in the results for any given period. When we look at each successive five-year window and compare it to the previous and subsequent periods, however, the procedure allows us to see which arguments "resonated" and which had "staying power." By resonance we mean in how many arguments moved in concert with one another, comprising an empirically identified frame or dimension, and by staying power we mean how many rolling five-year windows the frame continued to exist. Where there was an increase in the number of stories relating to racial disparities in capital sentences, for example, did any particular other arguments also show greater prevalence? Where those stories declined over time, did other stories also decline? The technique allows us to see what arguments cluster

together or "piggy-back," forming a single theme or dimension. In this way, we can distinguish between frames that die out quickly and those that had strong enough resonance and staying power to command significant attention over several years; we call this latter category "evolutionary frames." Figure 4 shows the results.

(Insert Figure 4 about here)

We identified a total of 34 evolutionary frames. A large number of these were short-lived and not especially coherent, the result of statistical anomalies to be expected when dealing with only five data points at a time. These are identified in unlabelled gray lines at the bottom of the figure. Our technique uncovered eight longer-lasting and more important frames, and these are individually labeled in the figure. As these frames were identified separately in each five-year window, individual clusters could come and go. The most important frames, of course, would be expected to last for a long time, and indeed we see that the constitutionality frame lasts quite some time. Similarly the morality or eye-for-an-eye frame is long-lasting. The heights of the lines reflect the total amount of coverage to the underlying arguments, weighted by the factor loadings. This gives an idea of the number of stories each year that reflect the underlying factor of the stories that make up the frame. And here we can see that the innocence frame is the strongest frame ever to appear in the *New York Times* over the past 45 years.

Figure 4 gives us a way to show what dimensions were most prominently discussed over time. By looking only at those arguments that form part of a more coherent cluster, rather than each argument separately, we eliminate a tremendous number of stories that are idiosyncratic, peculiar, or contradicted by some other articles present in the same period. And glancing at the figure we can trace what should look like a familiar evolution of the debate, from a focus on constitutionality to the emergence of the innocence argument beginning in the mid-1990s, with a

consistent concern for morality issues over much of the same time period. Table A-1 shows the arguments that make up each of the frames identified in Figure 4, which allows us to assess both the substantive content of the frames as well as their resonance.

Our review of the structure of argumentation in the death penalty debate has allowed us to trace the topics of most prominent discussion in the media since 1960. There were powerful morality discussions in the period surrounding the constitutional moratorium and reinstatement, and many of these were centered on the moral justification for the reinstatement of the penalty: the eye-for-an-eye theme. In later years, new and equally powerful arguments resonated through the system: constitutional problems, questions about the legitimacy of various modes of execution, and then a series of concerns relating to juveniles, the mentally handicapped, and flaws in the system in general. Table A-1 shows that the innocence frame, statistically identifiable since 1992, combines nine different component arguments, equal in resonance to the most powerful previous argument, the pro-death penalty constitutionality factor identified from 1968 to 1982. The "resonance" of the frame means that a number of previously distinct arguments, such as that the system is racist or that defendants often have inadequate representation, now cluster together into a single, statistically identifiable frame. Many of these individual arguments are not new; what is new is that in the last ten years they have come together to create a cluster of related arguments. This resonance gives the individual arguments more power since those exposed to them are simultaneously more likely to see other related and supportive arguments. Figure 4 makes clear that the new innocence argument is important not only because of its high resonance; it is also unprecedented in its overall strength. The numbers of stories appearing with these arguments is higher than any other previous frame we have identified.

We can see the dramatic rise of the innocence question in a simpler but complementary manner in Figure 5, which shows the number of stories each year presenting any of the following: 1) claims of innocence; 2) problems relating to evidence used in trial; 3) problems or imperfections in the justice system; or 4) characteristics of the defendant.

(Insert Figure 5 about here)

This cluster of issues, ranging from simple humanization of the defendant to demonstrations of actual innocence through exonerations, has always been present in the death penalty debate, as Figure 5 shows. However, none of these issues was a prominent aspect of media coverage of the death penalty until they collectively surged to unprecedented levels of coverage in 2000. From 1960 to the mid-1980s there was trivial coverage of these questions, typically fewer than ten articles even mentioning them. Coverage grew from the 1980s to the 1990s, but rocketed to new levels in 2000.

We have shown using a variety of methodologies how the nature of the death penalty debate has been transformed over the last 45 years. The shifting foci of attention have caused systematic variations in the overall tone of attention over time. Figure 6 shows these trends.

(Insert Figure 6 about here)

The data in Figure 6 capture the net results of all the shifting foci of debate explained in the previous section. As attention has moved from the victims to the defendants, from morality and constitutionality to mode of execution and to the possible imperfections in the justice system itself, the net result has been a movement towards greater anti-death penalty reporting. Of course, the data also show the rise of the pro-death penalty discussion during the 1970s and 1980s. In sum, our combined analysis of the topics and the tone of coverage allows us to address both the multidimensional nature of the debate as well as the simpler question of its tone. We

have developed a single measure valid for tone across the entire historical period, and we have shown how this is explained not by the same arguments over time, but by different arguments and shifting attention during different historical periods. The topics of discussion explain the tone, and the tone explains the public policy response (as we show in the next section). Shifting attention from one topic to another therefore can be linked clearly to important policy shifts, reversing long-standing policy equilibria.

The Impact of Framing on Capital Sentencing

Approximately 100 Americans were sentenced to death on average in each year from 1961 to 1972. The numbers varied widely during the years immediately surrounding the four-year constitutional moratorium on executions from 1972 to 1976. In the years following the reinstatement of capital punishment, numbers rose in a regular progression from 137 in 1977 to 320 in 1996. Since 1997, death sentences have dramatically declined, reversing a twenty-year trend. Only 125 Americans were sentenced to death in 2004, less than one-half the number of eight years before.

So far we have looked at comprehensive results from a large-scale study of media coverage over fifty years. Here we look at the impact of these changes on the policy response. Figure 7 shows the numbers of capital sentences, the number of executions, and the size of the death row population over time.

(Insert Figure 7 about here)

The number of death sentences per year across America was high in the early parts of the century, reaching a peak in the 1930s and just before World War Two. In the more recent period, however, Figure 7 makes clear that there were approximately 100 cases per year before the 1972–76 moratorium; that there were huge changes induced by those constitutional decisions

as the states first anticipated problems, then pushed through huge increases in sentences in that period; that there was a steady and large increase in the use of the death penalty in the 1980s leveling off at almost 300 cases per year until about 1996; and since 1997 a dramatic decline in the number of death sentences has followed, so that by 2004 there were only 125 death sentences, as compared to 320 in 1996. The total death row population of course relates to the accumulated number of previous death sentences, and that number increases dramatically over the period, moving from 134 in 1973 to over 3,500 by 1999. Finally, executions have risen sharply in the 1990s, but those have declined more recently as well, from 98 in 1999 to 59 in 2004. Even the total death row population declined substantially in 2003 for the first time since the 1970s. In sum we see the expansion of the death penalty in the period following 1976, and the beginnings of what may prove to be an important shift towards lower use in the 1990s and beyond. The turning points come in the mid-1990s.

We use the number of death sentences as the single most appropriate gauge of public policy in this area. While many who are initially sent to death row are later released, have their sentences commuted, or are not executed for other reasons, the decision by a jury to sentence someone to death is a powerful policy statement, one of the most powerful our government ever makes. It reflects both legal mores and social concerns. Thus, we find it to be the most appropriate dependent variable for our analysis. (The most logical alternative dependent variable would be executions, but these come after years of appeals and introduce both long lag structures and a period of deterministic outcomes, leaving us too few observations for reliable analysis.)

We estimate a model of death sentences based on the net media tone variable presented in Figure 6, the number of homicides, the number of states with the death penalty, and dummy

variables reflecting the beginning and the end of the constitutional moratorium (1972 and 1975).[4] Our modeling is slightly complicated because of the nonstationarity of several of the variables of interest. Both the number of sentences and the net tone of media attention have, in general, trended over time. There appears to be no inherent tendency for juries to sentence some average number of convicted murderers to death over the years, nor is the net amount of pro-death penalty attention in the *New York Times* stable, especially in the last two decades. The same is true for the number of homicides reported annually over this same period. In general, there was growth in the number of homicides until 1990, when homicides began a slow decline. And the number of states with the death penalty grew relatively steadily after the moratorium.

This behavior suggests that these time series are nonstationary and in particular that they may be unit-root processes. We test this hypothesis formally using the augmented Dickey Fuller test (see Table A-2), and this analysis shows that we cannot reject the unit-root null hypothesis for any of the series at the .05 level. As a result, we cannot use standard least-squares regression

[4] We tested the competing argument that rather than a media effect, sentences have dropped due to increasing numbers of people released from death row during this period. Our findings are robust to the alternative specification that includes the cumulative number of exonerations. The impact of media coverage, homicides, and the long-run disequilibrium remain substantively and statistically significant ($p = .01$). However, cumulative exonerations and the total number of states with the death penalty are correlated at over .95, rendering the model unstable. Additionally, such a model requires a more complex lag structure that consumes precious degrees of freedom. Since the capacity to implement the death penalty must be in place before exonerations are even possible, there is stronger theoretical reason to include the total number of states with the death penalty, as we do here.

to model the number of death sentences per year. In particular, standard limit theory does not apply, thereby invalidating our test statistics. Yet our theoretical understanding is that the number of death sentences is tied in the long run to the number of homicides, the number of states that use the death penalty, and most importantly for our purposes, the net tone of public discussion as reflected in media coverage. In order for this to be true, these series must be cointegrated.[5]

We test for the presence of cointegration and estimate the resulting model following the Johansen procedure (1992a, 1992b 1996).[6] Specifically, we test for cointegration using the likelihood ratio trace statistic, which indicates that there is one cointegrating equation.[7] We then

[5] We could model the series in first differences, which are stationary processes, but to do so would imply that the number of sentences changes immediately in response to changes in our explanatory variables. Further, when a shock upsets the relationship there is no mechanism to keep the explanatory variables in synch with sentences. Such a behavioral relationship does not fit what we know about sentences.

[6] Briefly, the Johansen method estimates a full information maximum likelihood vector autoregression of order p of the potentially endogenous variables under consideration; a likelihood ratio test for rank is used to determine the number of cointegrating vectors; and in the presence of cointegration, a vector error correction model is estimated. In the case where there is one cointegrating vector and that vector influences the changes in only one variable in the system (here sentences), weak exogeneity may be assumed and the final error correction model can be estimated without estimating the full system.

[7] The trace statistic is distributed as a multivariate version of the Dickey-Fuller unit-root distribution that is a function of sample size, the number of cointegrating relationships under the

estimate an error correction model (ECM) using maximum likelihood. The ECM estimates changes in the number of death sentences as a function of short-run changes in the explanatory variables that compose the long-run equilibrium and deviations from the long-run cointegrating relationship and thus estimates the long-run relationship simultaneously:

$$\Delta S_t = -\gamma(S - \beta_1 H - \beta_2 T - \beta_3 TS - \alpha)_{t-1} + \beta_4 \Delta S_{t-1} + \beta_5 \Delta H_{t-1} + \beta_6 \Delta T_{t-1} + \beta_7 \Delta TS_{t-1} + \beta_8 MB_t + \beta_9 ME_t + \varepsilon_t \quad \text{(equation 1)}$$

where Δ is the first difference operator; γ is the error correction coefficient; the term in parentheses is the long-run, or cointegrating, relationship; S is sentences; H is homicides; T refers to net tone of the coverage in the *New York Times*; TS is the total number of states using the death penalty; MB is a dummy variable coded one in the first year of the moratorium; and ME is a dummy coded one in the last full year of the moratorium. Table 3 shows the results.

(Insert Table 3 about here)

The top part of the table gives the long-run cointegrating relationship of sentences with homicides, state capacity, and net tone. The signs of the coefficients for this relationship are negative such that in expectation the number of death sentences plus the linear combination of explanatory variables times their coefficients (minus the constant) is equal to zero. Because γ is negative, the equilibrium effect of each explanatory variable is positive. Specifically, for every 1000 homicides we expect nearly 7 additional citizens will be sentenced to death in equilibrium. Similarly, increases in the number of states using the death penalty will lead to more death sentences: each additional state entering that group increases the number of death sentences per

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null, and deterministic regressors (MacKinnon-Haug-Michelis 1999). The test rejects the null of no cointegration with a p-value of .02, but cannot reject the null that there is at most one cointegrating equation at the .05 level.

year by just over 3. Like homicides and capacity, increases in net pro-death penalty coverage in the *New York Times* increase the equilibrium number of yearly sentences. Every net additional pro-death penalty story leads to more than 2 additional expected death sentences in the long run. Consider that from 1984 to 1993 the median number net pro-death penalty stories was +20 over this period. The equilibrium effect of this large number of net pro-death penalty stories is an expected additional 49 individuals sentenced to death each of these years, so this is a powerful effect substantively (equal in impact to an increase of 7,000 homicides). Overall the model fits quite well, with an R-squared of .65. The Portmanteau Q statistic indicates that there is no evidence of significant autocorrelation in the model residuals.

The nature of the long-run equilibrium is in itself telling: Given a particular configuration of media coverage, homicides, and number of states exercising the death penalty, we can predict the equilibrium level of death sentences. In addition, however, deviations from the long-run equilibrium predict short-term changes in the number of people sentenced to death. The error correction coefficient tells us the rate at which the number of death sentences changes to correct for deviations from the equilibrium. Because death penalty sentencing trials are such serious events, reserved for particularly egregious crimes, and given the extensive time it takes to charge and convict a defendant, we expect a certain amount of inertia: Reactions to shocks pushing the system temporarily from its equilibrium are not expected to be immediate. This is indeed what we see. The estimated rate of error correction is .34, indicating that 34% of the disequilibrium—the amount the number of sentences differs from that predicted by the long-run relationship—is corrected in the year after the equilibrium is disturbed so that one year later 66% of the disequilibrium remains. In the subsequent year 34% of the remaining disequilibrium is corrected leaving 43.6% left after 2 years, 28.8% after 3 years, 19% after 4 years, and so on.

Assume that the number of sentences is in an equilibrium state. This means that the number of sentences – 57.59 – (0.0069*homicides) – (3.20*number of states with the death penalty) – (2.44*net number of pro-death penalty stories) is equal to zero. We can calculate the expected effect of sustained coverage of the anti-death penalty innocence and fairness arguments that began in 1997. In contrast to the last half of the 1980s and first half of the 1990s, when coverage was consistently pro-death penalty, from 1998 to the end of our sample period the average net tone of stories was –57. Holding all else constant, sustained coverage of this frame would kick the number of sentences out of equilibrium. There is no contemporaneous effect on death sentences in our model, yet this decrease in net tone would render the number of sentences too high by 139 sentences. This disequilibrium will be corrected at a rate of 34% each year so that in the year after the "shock" we expect a drop of just over 47 in sentences leaving 66% of the disequilibrium yet to be corrected. In the next year 34% of this remaining disequilibrium is corrected with an expected 31 fewer people sentenced to death. Twenty-one fewer people are expected to be sentenced to death in the next year, 14 fewer in the next year, and so on until the disequilibrium is corrected. Given the relatively slow rate of error correction it will take 12 years before the remaining disequilibrium is less than one death sentence. Given that the average anti-death penalty tone of our example was maintained and often significantly larger in a succession of years at the end of our sample (–105, –86, –72, and –56 were the values from 2000 to 2003), the long-run effects of these changes in issue-framing have not yet played out and we expect the number of people sentenced to death to continue to decrease, particularly because the number of states with the death penalty has remained constant in the last 4 years (at 33) and the number of homicides has remained relatively steady so that neither is countering the disequilibrating behavior of the innocence frame.

Consistent with our expectations, we see the relative immutability of sentences in the short term beyond the effects of system capacity: The more states capable of carrying out the death penalty, the more people sentenced to death. We see this in two ways: first, in the beginning of the moratorium period, which coincides with a significant and large drop (–73) in the number of citizens sentenced to death; and second, in the last year of the moratorium, when it became clear that the death penalty moratorium would be lifted and the number of sentences increased, with an estimated effect of 134 additional sentences. Finally, in addition to its long-run effect, the change in the total number of states implementing the death penalty has an immediate short-run effect. When another state joins the ranks of those with the death penalty, we expect an additional 7.7 citizens to be sentenced to death coincident with the change in capacity. None of the other short-run effects are significant as expected, given the inertial nature of the justice system.

We can illustrate the relative impact of changing media tone and actual homicide rates quite simply. The long-term equilibrium rates apparent in Table 3 show that these are both important predictors of the number of death sentences. Short-term "shocks" in one or another variable can cause short-term deviations as well, but most of these would be corrected in subsequent years when the values retuned closer to their long-term averages. The model has substantial inertial properties, as we have discussed. However, *sustained* deviations from the longer term equilibrium can have an important impact, and in both the homicides and the media coverage cases we see such long-term deviations. For example, the average number of homicides from 1986 to 1994 was 22,515 but declined to 17,220 from 1995 to 2004. This decline of over 5,000 homicides per year during this period could well be the main reason for the decline in death sentences. At the same time as homicides declined, of course, media coverage

shifted from a net positive tone of +15 from 1986 to 1995 to a value of –57 from 1998 to 2004, for a net shift of –72 points. Figure 8 illustrates the impact of these two sustained shocks on the number of death sentences, using the error-correction model presented in Table 3 and showing its progression over time.

(Insert Figure 8 about here)

Figure 8 shows that the sustained movement from a net positive media tone towards capital punishment, prevalent in the 1980s and 1990s, to the more critical tone that has followed from the rise of the innocence frame beginning in the mid-1990s can be associated with a decline of 175 death sentences per year, all other factors equal. The substantial decline of homicides, over 5,000 cases per year, is associated with an annual decline of only 34 death sentences, controlling for the same factors.[8]

Throughout this paper we have paid attention to the shifting dimensions of debate in this issue and we have documented the rise of the innocence frame. It is clear that since the mid-1990s, the dramatic increase in "bad news" about the death penalty has been due to this argument. We showed how this was unprecedented in its strength. Now we have shown that

[8] In a previous version of this research we presented a simpler statistical model, which included the same variables but did so with a lagged-dependent variable OLS set-up. That model predicted 88 percent of the variance and showed that the shift in media coverage was associated with approximately 100 fewer death sentences whereas the decline in homicides was associated with approximately 24 fewer sentences. The time-series properties of the previous model include nonstationarity, however, which biases those results. This comparison shows that the general thrust of our findings is robust to alternative specifications, however. See De Boef et al. 2005.

this huge increase in coverage is probably related to an annual decline of about 175 sentences per year whereas a simultaneous decline in homicides had an impact only one-fifth as great. So the shift in public discussion, the rise of the innocence frame, is probably much more important than changes in the underlying crime rate in explaining the dramatic decline in capital sentencing over the past ten years. Framing has had a tremendous impact, more than criminality itself.

Conclusion

Our analysis has shown that dramatic changes in public discussion and media coverage of the death penalty have occurred over time and that the new innocence or system-is-broken frame has had a major impact on public policy outcomes. Framing effects were clearly apparent both in the build-up of the numbers of capital sentences from 1977 to 1993 and in their historic decline since that date. Our analysis also shows that the effects of these changes have still not fully played themselves out, so that we may expect continued declines in death sentences in the years to come. So we have documented powerful policy effects in an important and improbable policy area.

We have elaborated here a number of methodological techniques that we hope can allow more systematic and convincing studies of the impact of issue-definition on public policy. Specifically, we propose methods to allow systematic content analysis to capture the multidimensional nature of public policy debate and to incorporate the dynamics of attention-shifting into time-series analytical models. E.E. Schattschneider (1960) wrote that the scope of a conflict determines the mobilization of bias. But so does the choice of topics for discussion. Here we have linked the focus of attention, from morality, to constitutionality, to victims and defendants, to flaws in the system, to their systematic biases in terms of the policy outcomes that they are most likely to justify and support. The organization of a debate, the choice of themes on

which to focus, and the continued allocation of attention to one dimension of discussion rather than another have great impacts on the net tone of the overall discussion. Where welfare reform debates focus on teen pregnancy, family breakdowns, and similar topics, harsher policies toward the poor are justified; where attention focuses on failures of the educational system, disabilities, and the structural causes of poverty, different policy directions are more likely. Where smoking debates focus on heath of non-smokers, the outcome may be different than when it focuses on smokers. Any number of examples can be used to illustrate these simple points. We have provided here a set of simple but powerful techniques that show how the shifting attention of discussion over time has led to dramatic changes in the overall tone of debate, and how this tone is then powerfully related to actual policy changes over time. The techniques we have laid out here should have broad applicability in other policy areas.

The death penalty is an old and well-understood debate. Traditionally, it has focused on questions of morality and on complicated legal maneuvers beyond the comprehension or interest of most Americans. But recent events and, we suspect, the advocacy efforts of those opposed to the death penalty have caused a dramatic shift in attention toward a new dimension of debate: whether the system works with no flaws or, indeed, could possibly ever do so. This new focus of attention, like previous foci of attention, comes with a bias, as is always the case. As the topics of attention have shifted over the decades, important shifts in the net tone of public debate have followed, and public policy has been changed. The techniques we have developed, beginning with a simple but comprehensive content analysis of media coverage, should allow others to replicate these results and explore the dynamics of attention-shifting for other issues.

The death penalty, like any issue in public policy, can be addressed either as a theoretical or as a practical question. Public opinion surveys show that most Americans support the policy,

in theory. As it has been reframed in recent years to focus more on practical questions of how well the system performs, this has had profound implications for public policy, leading to a historic decline in its application, in spite of a public opinion environment that remains relatively favorable, at least in the abstract. We have attempted to provide a number of tools that will help push the literature toward more systematic treatment of attention-shifting in policy debates. But we hope not to lose sight of the practical implications of our findings: We have shown that recent framing dynamics are by far the most important factors in explaining the historic decline in the number of death sentences in America over the past ten years. The death penalty is a long-lasting, familiar, and morally charged debate on which most Americans have relatively fixed attitudes. The fact that powerful framing effects can be clearly linked to policy changes provides tremendous support for the general idea: Framing matters.

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Table 1. The Topic Determines the Tone.

	Tone of Article							
	Pro-DP		Anti-DP		Neutral / Uncodeable		Total	
Topic	N	%	N	%	N	%	N	%
Morality	267	46.60	219	38.22	87	15.18	573	100.00
Mode of Execution	86	39.09	92	41.82	42	19.09	220	100.00
Constitutionality	467	35.27	615	46.45	242	18.28	1,324	100.00
Efficacy	53	26.50	107	53.50	40	20.00	200	100.00
Cost	3	18.75	9	56.25	4	25.00	16	100.00
Fairness	159	16.44	648	67.01	160	16.55	967	100.00
International	11	12.50	59	67.05	18	20.45	88	100.00
Total	1,046	30.87	1,749	51.62	593	17.50	3,388	100.00

Source: Coded from *New York Times* abstracts, 1960–2003. Note that a single abstract may mention more than one topic, but is coded only once for tone.

Table 2. Mention of the Victim or the Defendant and Tone of Article.

	Tone							
	Pro-Death Penalty		Anti-Death Penalty		Neutral / Uncodeable		Total	
Mentions of:	N	%	N	%	N	%	N	%
Victim, not of Defendant	347	64.50	129	23.98	62	11.52	538	100.00
Both Victim and Defendant	49	37.12	64	48.48	19	14.39	132	100.00
Neither Victim nor Defendant	846	31.65	1,198	44.82	629	23.53	2,673	100.00
Defendant, not of Victim	59	17.30	206	60.41	76	22.29	341	100.00
Total	1,301	35.31	1,597	43.35	786	21.34	3,684	100.00

Source: Coded from *New York Times* abstracts, 1960–2003.

Table 3. A Dynamic Model of Death Sentencing.

Cointegrating Relationship	
Sentences $_{t-1}$	1.00
Homicides$_{t-1}$	-0.0069
	(0.0034)
Net Tone $_{t-1}$	-2.44
	(0.54)
No. States with the Death Penalty $_{t-1}$	-3.20
	(1.24)
Constant	-57.59
Error Correction Relationship	
Disequilibrim	-0.34
	(0.08)
Δ Sentences $_{t-1}$	-0.16
	(0.11)
Δ Homicides $_{t-1}$	0.0033
	(0.0048)
Δ Net Tone $_{t-1}$	-0.21
	(0.26)
Δ No. States with the Death Penalty $_{t-1}$	7.70
	(4.36)
Beginning of the moratorium	-73.07
	(30.32)
End of the moratorium	134.12
	(33.78)
R-squared	.65
Adjusted R-squared	.58
F Statistic (significance)	9.00 (0.00)
Standard Error of the Equation	28.31
Standard Deviation of Sentences	84.68
Mean Δ Sentences	0.52
Standard Deviation of Δ Sentences	43.55
Portmanteau Q Statistic (significance)	24.08 (0.19)

Note: The table shows a single equation error-correction model of changes in the annual number of death sentences.

Figure 1. The Number of Stories on Capital Punishment in the *New York Times*, 1960–2003.

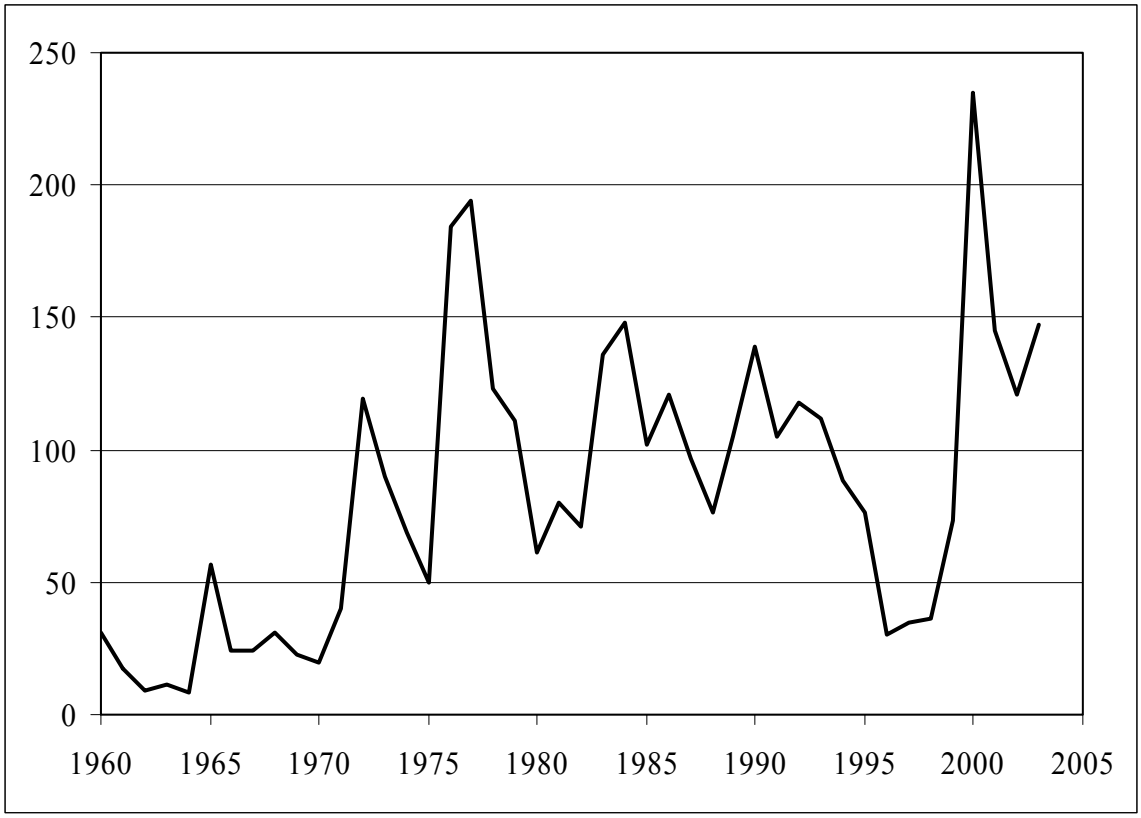
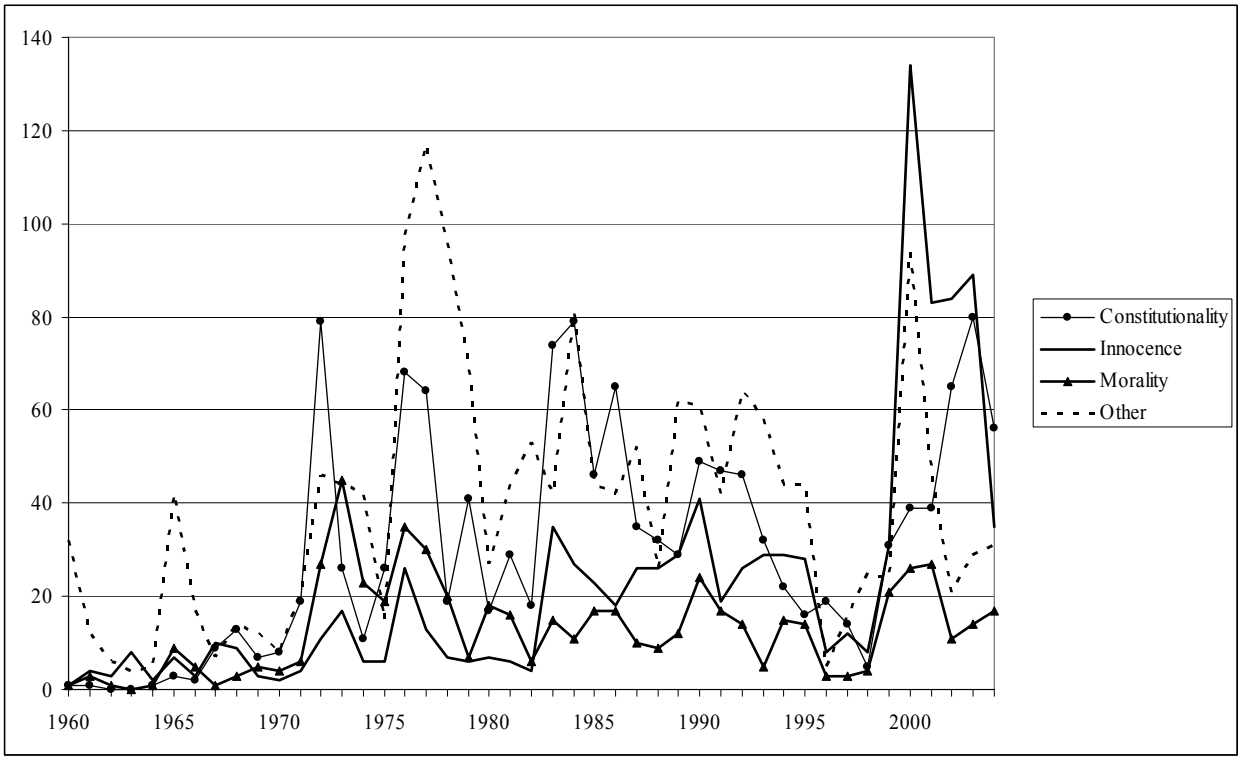


Figure 2. Evolving Dimensions of Debate.



Note: Every article was coded into one of 67 distinct arguments, grouped into eight major dimensions: constitutionality, innocence / fairness; morality; efficacy; cost; mode of execution; international; and other. A single abstract could be coded more than once, and there were a total of 4,763 dimensions coded across the 3,692 articles coded. In this figure, we combine efficacy, cost, mode, international, and other into a single group called "other" for ease of presentation.

Figure 3. Relative Media Attention to the Victim and the Defendant, 1960–2003.

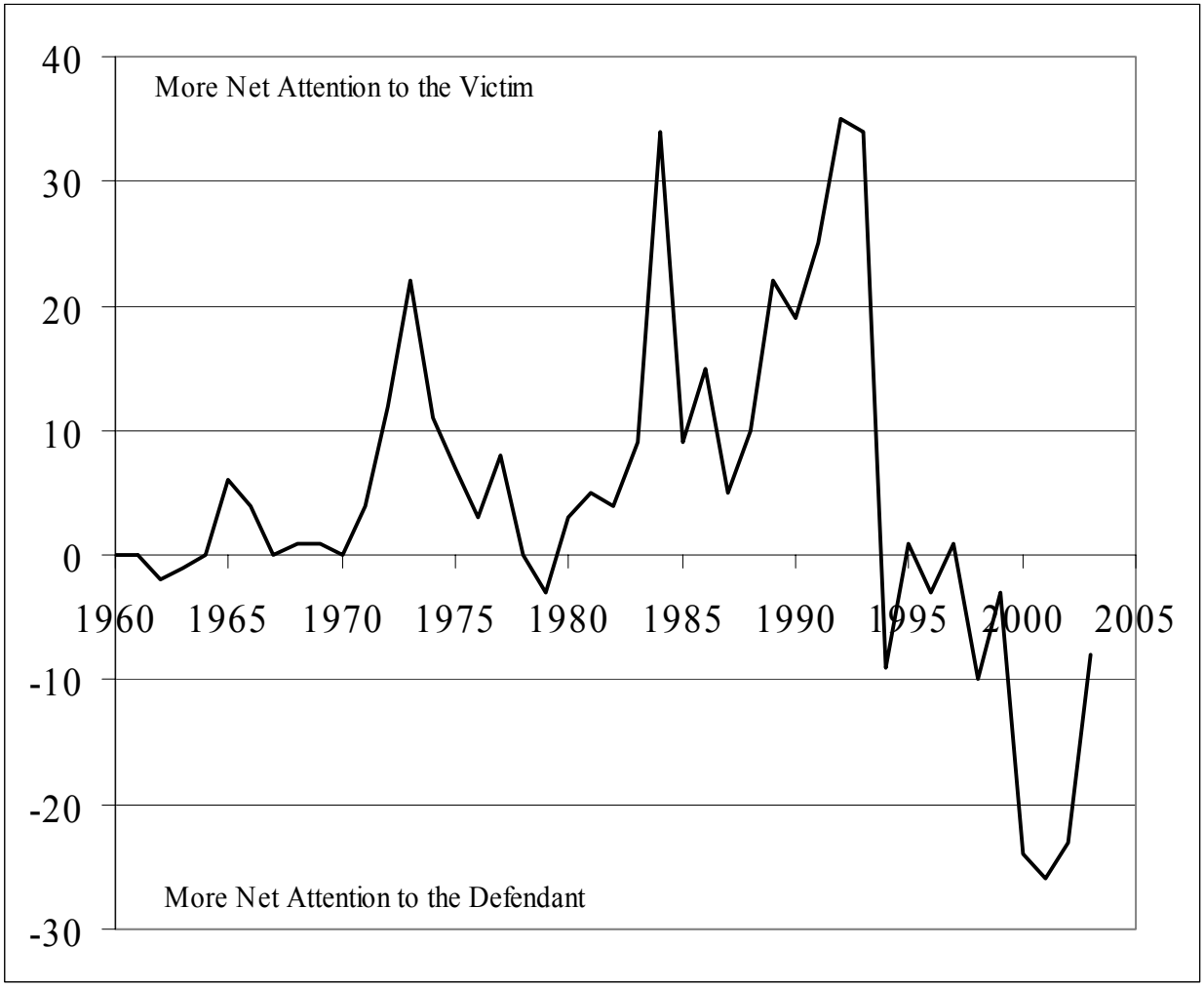
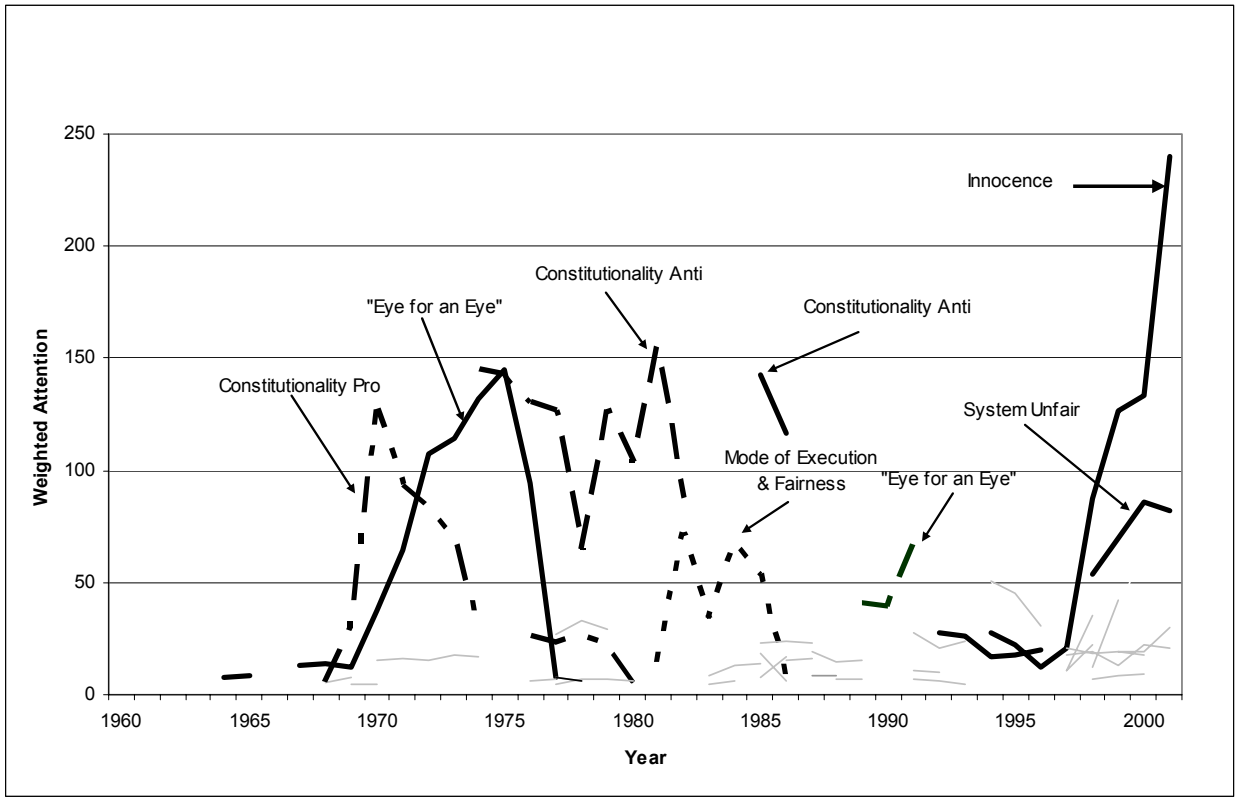
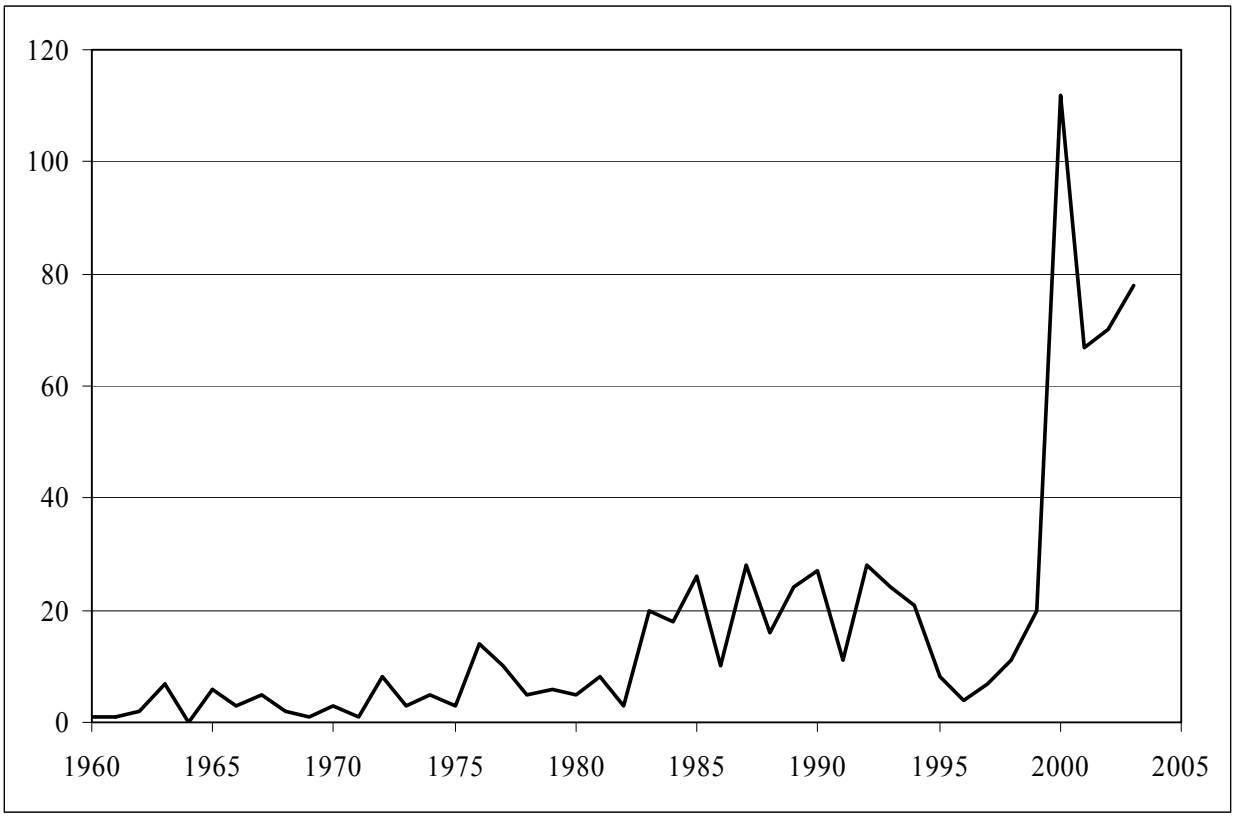


Figure 4. Evolutionary Frames Relating to the Death Penalty, 1960–2001.



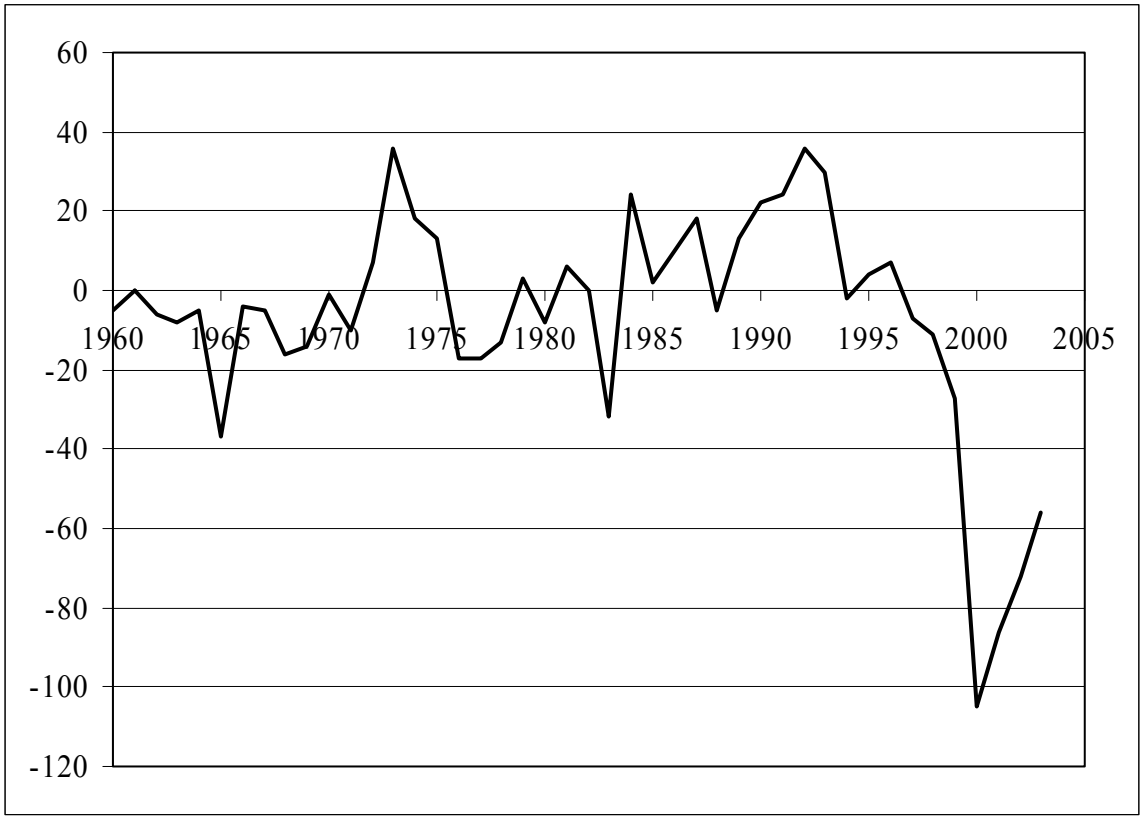
Note: The figure shows the weighted number of stories on each dimension achieved in a series of five-year window factor analyses. The labeled dimensions are the most prominent clusters of arguments; see Table A-1 for the component arguments that make up those dimensions. The unlabelled grey lines at the bottom represent other frames statistically identified but which are not interpreted here.

Figure 5. The Rise of the Innocence Frame.



Note: The figure shows the number of stories mentioning elements concerning: 1) claims of innocence; 2) problems relating to evidence used in trial; 3) problems or imperfections in the justice system; or 4) characteristics of the defendant.

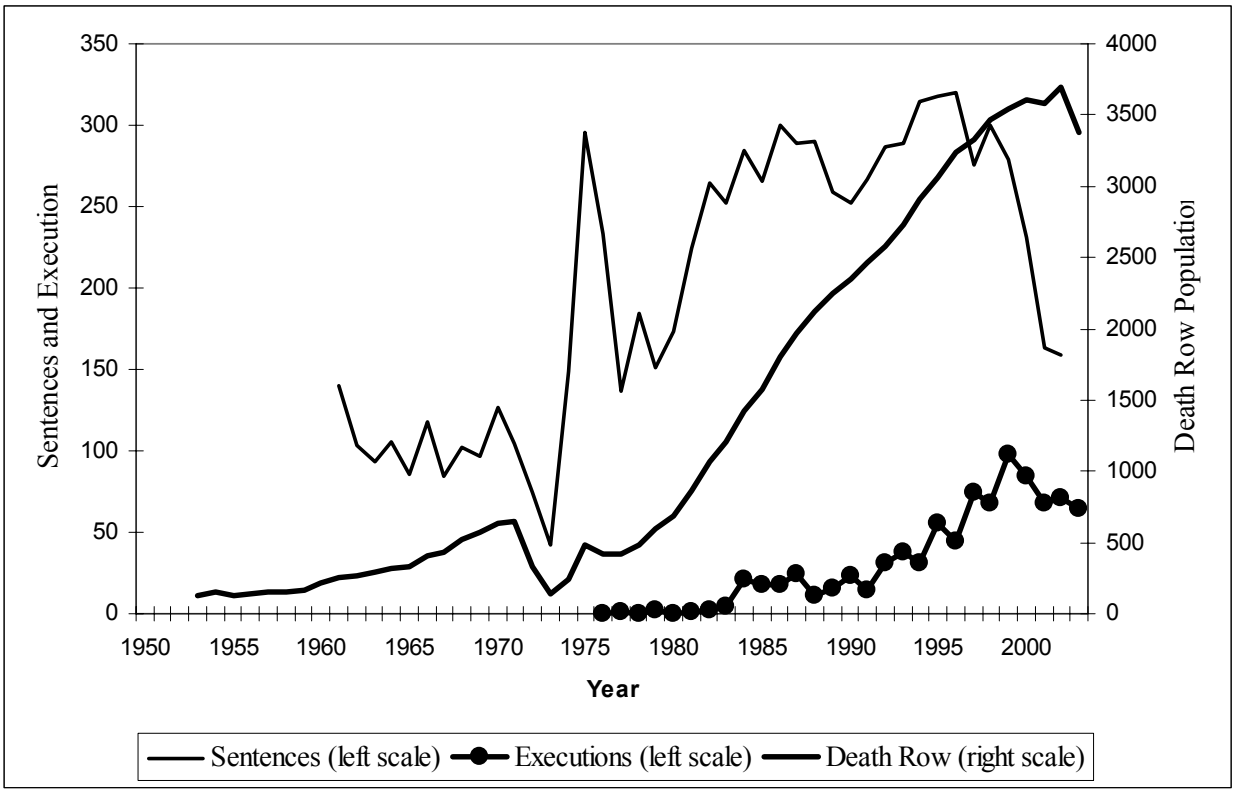
Figure 6. The Net Tone of Coverage.



Note: The figure shows the number of stories with a pro-capital punishment theme minus the number with an anti-capital punishment theme. Neutral or uncodeable stories are not counted. Pro- and anti- stories refer not only to editorial statements or expressed opinion, but more generally to reports of events that would tend toward or against the application of a capital sentence. So a report of an appeal denied is coded pro-death penalty; a report of flaws in the legal representation or mental capacity of a defendant is coded anti-death penalty.

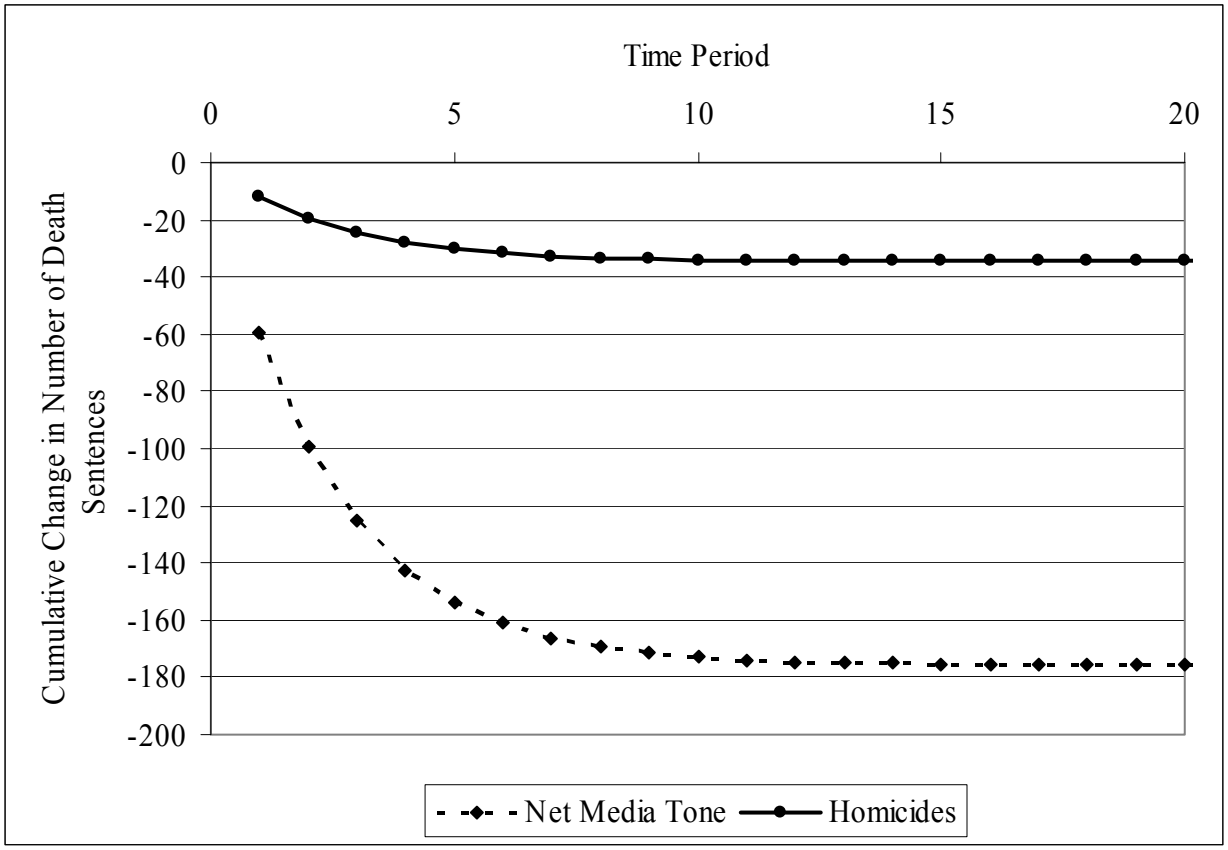
The correlation between the series depicted in Figure 3 and the Net Tone depicted in Figure 6 is 0.80.

Figure 7. Death Sentences, Executions, and the Size of Death Row.



Note: Data from Death Penalty Information Center. 2004 data from Associated Press 2005.

Figure 8. Expected Impact on Death Sentences of Changes in Media Tone and Homicides.



Note: The figure shows the cumulative impact of a sustained movement of 72 more anti-death penalty stories and of a decrease of 5,000 homicides per year. These figures are taken from the actual values of these variables from the late-1980s and early 1990s to the most recent period. See text for details.

Table A-1. The Content and Resonance of Evolutionary Frames.

1: The "Eye for an Eye" Frame (1964–1967)
- 203: pro moral – crime deserves death penalty (627)
- 101: pro efficacy – deterrence (116)

2: Constitutionality–Pro (1968–1982)
- 400: neutral constitutional (148)
- 403: pro constitutional – popular support up (146)
- 409: pro constitutional – other (83)
- 401: pro constitutional – not cruel and unusual (56)
- 419: anti constitutional – other (63)
- 111: anti efficacy – alternate systems better (21)
- 314: anti fairness – mandatory sentencing wrong (12)
- 210: anti moral – killing/vengeance wrong (11)
- 100: neutral efficacy – general (10)

3: Constitutionality–Anti (1974–1982)
- 419: anti constitutional – other (560)
- 409: pro constitutional – other (321)
- 319: anti fairness – other (67)
- 600: neutral mode (51)
- 210: anti moral – killing/vengeance wrong (36)
- 200: neutral moral (24)
- 300: neutral fairness (18)

4: Mode of Execution and Fairness (1981–1986)
- 600: neutral mode (136)
- 319: anti fairness – other (33)
- 312a: anti fairness – racist (32)
- 314: anti fairness – mandatory sentencing wrong (27)
- 210: anti moral – killing/vengeance wrong (21)

5: Humanizing the Defendant (1985–1986)
- 419: anti constitutional – other (259)

6: The "Eye for an Eye" Frame, redux (1989–1992)
- 203: pro moral – crime deserves death penalty (115)
- 400: neutral constitutional (63)

7: The "Innocence" Frame (1992–2002)
- 317: anti fairness – innocence (386)
- 318: anti fairness – system is broken (245)
- 310: anti fairness – inadequate representation (236)
- 312a: anti fairness – racist (179)
- 302: pro fairness – system is "too" fair; should be abbreviated (114)
- 312b: anti fairness – classist (59)
- 301: pro fairness – system is fair (34)
- 712: anti international – foreign nationals should be exempt (30)

8: System is Unfair (1992–2001)
- 319: anti fairness – other (394)

Note: These 8 frames were revealed by evolutionary factor analysis of 67 different arguments across every five-year window of time, moving from 1960 to 2003. Arguments comprising each factor are listed along with the weighted number of stories for each argument. For a full list of the 67 component arguments, see Baumgartner and Boydstun 2005.

Table A-2. Augmented Dickey Fuller Unit-root Tests

Variable	
Sentences[a]	-1.647 (.5806)
Homicides[a]	-2.389 (.1506)
Net Tone[a]	-2.427 (.1405)
No. States with the Death Penalty[b]	-2.008 (.5806)
Sample size 42	

MacKinnon p-values in parentheses. Lag length determined with the Schwartz information criteria. The Augmented Dickey Fuller joint test that each series is individually a unit-root process (Fisher Chi-Square) does not reject the unit-root null, χ^2=9.307, p=.3171. A joint test of the null of a common unit root cannot be rejected using Levin, Lin and Chu's t statistic, t=1.728, p=.9580.

[a]Model includes a constant only

[b]Model includes a constant and trend