

Representational Style:
The Central Role of Communication in Representation

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Abstract

Quantitative studies define representation through roll call votes, but roll call votes alone are insufficient to describe a legislator's *representational style*: how legislators respond, anticipate, and shape their constituents' preferences. Representational style is composed of three elements: how legislators invest their time and resources in Washington, their *Washington styles*; the way they connect to their constituents in their district, their *home styles*; and how they vote on legislation, their *voting*. In this book, I use new comprehensive, systematic, and verifiable measures of home style to demonstrate its central role in representational style. Home styles are important on their own as the primary way legislators define the representation provided to constituents. Legislators define diverse, stable, and nonpartisan home styles that reflect senators' multiple motivations in the institution. Home styles are also important because they are much more than cheap talk. I demonstrate that home styles are systematically related to what legislators do in Washington and how senators vote on controversial legislation, therefore providing a credible indicator of legislators' representational styles. Legislators also value opportunities to maintain their home styles, which bureaucrats exploit to cultivate support for their agencies. Because analyzing home styles across all legislators using standard methods and data is infeasible, I introduce a new Bayesian statistical model for political texts (estimated using a variational approximation, a deterministic alternative to MCMC) and an original collection of over 64,000 Senate press releases to measure home style.

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To my wife, Terese, and my parents, Karl and Becky

Chapter 1

Home Style and Political Representation

Abstract: The quantitative study of Congress and representation is synonymous with the study of roll call votes. While this research has yielded substantial insight into how members of Congress vote on legislation, it ignores the diverse ways legislators respond, anticipate, and shape their constituents' preferences. Collected together, these activities constitute a legislator's *representational style*. In this book, I show how legislators present and explain their work to constituents, their home styles, are inherently important for describing legislators' representational styles and therefore political representation and policy outcomes. To demonstrate why home style is an integral part of representation, I first qualitatively describe Richard Shelby's (R-AL) and Jeff Sessions' (R-AL) home styles, showing how the senators define the representation they offer to constituents and how this image is closely related to the way they invest their time and resources in Washington. This qualitative analysis also demonstrates one of the obstacles to studying home style: the high costs of measuring how legislators interact with constituents using standard methods. The result is that scholars regularly cite Fenno (1978), the study that first introduced the concept of home style, but rarely study home style, which I demonstrate using an innovative new approach to literature reviews based upon statistical models for texts. In this book, I systematically test and demonstrate the importance of home style for representation by introducing a statistical model that makes the comprehensive and verifiable measurement of home style feasible. In this chapter, I provide a brief introduction to both the data and statistical model and provide a road map for the book—describing the diverse tests and evidence I use to demonstrate the integral role of home style in political representation.

1.1 Introduction

Representation, at least in quantitative studies, is synonymous with reflection: representatives adopting their constituents' preferences in roll call votes (e.g., Miller and Stokes 1963; Achen 1978; Canes-Wrone, Brady and Cogan 2002). This definition motivates a voluminous literature analyzing Congressional roll call votes, providing important insights into the nature of voting decisions in Congress (Poole and Rosenthal 1997; Clinton, Jackman and Rivers 2004). But there is more to representation than how members of Congress vote on legislation. Representatives invest their time and resources in a broad range of politically important activities, all of which are essential for understanding the way representation actually occurs. These other components of representation, along with roll call votes constitute a legislator's *representational style*, which is composed of legislators' work in Washington, *Washington style*; their *voting* decisions; and the way legislators present and explain themselves and their work to constituents, *home style*.

In this book I demonstrate that home style is an integral component of representational style. Home style is important for representation on its own as the primary tool legislators use to connect with constituents and because it is systematically related to legislators' Washington style and voting decisions. I use a diverse set of tests and an abundance of evidence to demonstrate how legislators' use home styles to define the type of representation provided to constituents. When defining the type of representation provided to constituents, senators articulate diverse, stable, and nonpartisan home styles that reflect senators' multiple motivations. Home styles also reflect what senators do in Washington, demonstrating that home styles are credible indicators of legislators' activities and not cheap talk. There are two ways home styles are not "cheap". First, legislators' home styles are associated with other activities in the institution, providing a useful indicator for representatives' broader

representational style. Second, members of Congress will value the opportunity to discuss certain topics with constituents, a fact that some agents of Congress will use to cultivate support among their Congressional principals.

Since its introduction in Fenno (1978), home style has become one of the most regularly cited concepts in the study of American politics. In spite of widespread agreement about its importance, the difficulties in measuring home style has precluded its systematic analysis. The result, as I demonstrate in this chapter using a new approach to literature reviews using statistical models for text, is that political scientists still regularly cite Fenno (1978) but rarely study home style.

To overcome the difficulties that have limited previous studies, I introduce new statistical tools and data providing systematic, comprehensive, and verifiable measures of home style across all senators. The statistical model I introduce measures senators' expressed priorities, a critical element of home style. I apply the model to a comprehensive collection of Senate press releases: every press release from each Senate office from 2005-2007. Using the estimated priorities from the press releases, I conduct comprehensive tests of how legislators interact with constituents outside of Congress and how home styles both reflect and affect behavior in Washington.

In order to demonstrate the importance of home style for political representation and its connection to behavior in Washington, I first provide a qualitative analysis of Jeff Sessions' (R-AL) and Richard Shelby's (R-AL) home styles.

1.2 Home Style and Representation: Sessions and Shelby

At first glance Jeff Sessions and Richard Shelby seem politically indistinguishable. Both are veteran Republicans from Alabama who have gained national attention for their high

profile roles in recent legislative battles. The senators followed a similar career path to the Senate: Shelby worked as a local attorney before moving to the House and then the Senate; Sessions was Alabama's attorney general before being elected to the Senate. Both senators were born and raised in Alabama and attended the same law school, University of Alabama. Sessions and Shelby even regularly share staff members: since 2000, over 10 staffers have worked in both senators' offices.

Given this similarity in background, professional experience, and staff, we might expect that Jeff Sessions and Richard Shelby represent their constituents in similar ways. Indeed, if we restrict our attention to the legislative activities normally analyzed in quantitative studies of representation—floor votes, especially—we would conclude that the superficial similarities manifest in senators providing nearly identical representation for their constituents. Both senators are well known as reliable conservative votes for the Republican party: during the 110th Congress, Sessions and Shelby cast the same vote 90% of the time, resulting in nearly identical Poole-Rosenthal scores (with Shelby slightly to the left of Sessions) (Poole and Rosenthal 1997).

But underlying this similarity in roll call votes is a striking divergence in the senators' representational styles and therefore the kind of representation they provide constituents. Jeff Sessions adopts a home style focused on substantive issues and immerses himself in policy in Washington. When in Alabama, Richard Shelby emphasizes his position on the Appropriations committee and the federal money he has secured for Alabama. In Washington, he invests himself and his staff into the appropriations process, insuring that he continues to deliver federal funds to Alabama.

The Statesman Sessions' home style is issue oriented, focusing upon his role in major national policy issues and educating constituents about his work on substantive problems.

This focus on policy issues begins with the statements and press releases from his office, with Sessions regularly emphasizing his expertise on major substantive issues. He is much more likely to discuss his role in Senate confirmations, his support for the Iraq war, or his opposition to Immigration reform than claim credit for the occasional earmarks he requests for Alabama.

This focus on substantive national issues also characterizes how Sessions relates to constituents when he returns to Alabama. During his reelection campaign in 2008, Sessions' staff set up opportunities for the senator to engage in standard "retail" politics—going into communities and shaking hands with constituents in an effort to appear accessible to the voters. But even when inserting himself in the day-to-day life of his constituents, Sessions' focus was on national policy rather than on how he would address Alabama specific problems. For example, one morning Sessions pumped gas at a local gas station for some of his constituents. Sessions began a conversation by asking about a constituent's gas bill, but quickly directed the conversation to a long discussion about regulation of oil companies and other steps that the federal government could take to decrease the price of gas, including increasing off-shore drilling (Roop 2008).

The basic interaction between Sessions and the constituent at the gas pump was repeated many times over the summer of 2008: Sessions would be in a situation where he could easily avoid national policy and instead claim credit for particularistic benefits for his constituents and local communities, but instead he chose to discuss and educate constituents about national issues. When meeting with constituents at a train station in Bibb County, Alabama (located in the Western part of the state) Sessions led a long discussion about US policy towards Iraq and foreign policy more generally. When constituents expressed their desire to move troops out of Iraq, Sessions defended an interventionist US

foreign policy by saying “I’ll just tell y’all we won’t be able to withdraw from the world” (Staff 2008*b*). While touring a catfish farm in Alabama, Sessions turned a conversation about how catfish farms operate into an extended and nuanced explication of the current challenges in agriculture and energy policy (Stevenson 2008*a*).

Given the focus on policy when engaging constituents in campaigns, it is unsurprising that some events were explicitly designed to show off Sessions’ policy strengths. For example, Sessions held an energy forum a few months before the 2008 general election (Anderson 2008). Even after the election Sessions made policy issues the center piece of his conversations with constituents. When speaking to a group of conservative activists, Sessions focused on his opposition to the first Obama budget (Dean 2009).

The focus on policy discussions with constituents reflects, and perhaps affects, the way Sessions invests his resources in Washington. A profile in *The Birmingham News* described how Sessions used his opposition to George W. Bush’s immigration reforms to distinguish himself from Richard Shelby, Sessions’ senior and more prominent colleague. The newspaper describes how Sessions

“mobilized his staff to do opposition research; he became a leading advocate of building a 700-mile fence along the country’s southern border; he camped out on the Senate floor for hours at a time to lecture his colleagues; and conservative media pundits seemed to have him on speed dial. Sessions had found his niche.” (Orndorff 2008)

Not only has Sessions focused on immigration policy, he also is well known for his work on judicial nominations (perhaps stemming from his own failed nomination to the federal bench). *The Washington Times* argues that Sessions has often drawn the ire of his fellow Republicans because of his single-minded focus (almost obsession) on judicial nominations (Staff 2008*a*).

Examining Sessions' home style reveals that he maintains an *issue oriented* representational style. In Washington, this issue based focus results in Sessions investing his time, staff, and other resources to address major policy issues. At home, he defines the representation he provides his constituents through the issues that he addresses in Washington. We now turn to Richard Shelby, who maintains a very different kind of representational style than Jeff Sessions.

The Appropriator Richard Shelby's home style provides a sharp contrast to the way Jeff Sessions communicates with his constituents. While Sessions focuses on national policy, Shelby focuses almost exclusively on claiming credit for federal money spent in Alabama. This begins with the statements from Shelby's office. In the vast majority of his press releases and public speeches, Shelby describes how he uses his position on the appropriations committee to secure federal money for Alabama or announcing grants awarded to state agencies.

The focus on appropriations is even more prevalent when Shelby delivers speeches in Alabama. Almost regardless of the forum, Shelby reminds his audience about how he "brings home the bacon". At a West Alabama chamber of commerce breakfast, Shelby described how he "already got well over \$500 million for our state university," and that his "goal is \$1 billion" before he retires (Stevenson 2009). To make clear his important role in securing funds for his state, Shelby regularly schedules appearances and speeches around new projects in his state. Over the course of 6 months (from November 2008 to April 2009) Shelby delivered speeches announcing a wide array of projects: he broke ground at a new prison in Aliceville (paid for with a \$200 million appropriation) (Morton 2009), was on hand to commemorate the building of a new courthouse in downtown Montgomery (the result of a \$25 million appropriation) (Beyerle 2009a), publicized a \$1.5 billion dollar

Navy contract for a ship factory in Mobile (Wilkinson 2008), and announced a massive new transportation project just outside of Mobile (funded with a \$70.9 million appropriation) (Wilkinson 2009). Grateful organizations help Shelby broadcast his accomplishments. For example, a “Shelby Hall” is located on both the University of Alabama and Auburn University campuses.

When Shelby announced that he was running for reelection in 2010, he linked his candidacy to the federal money he has secured for Alabama. After announcing his goal of securing \$1 billion for the University of Alabama, Shelby quickly reminded the audience at the Chamber of Commerce breakfast that he was “running for reelection” in 2010 (Stevenson 2009). And when asked about whether he was running for office in 2010 on a local television show, Shelby remarked “I’m going to run on my record of service to the people of Alabama” and then said that he had “a lot of things I want to do for our University” and to “revitalize downtown Tuscaloosa” (Stevenson 2008*b*).

Shelby’s appropriations based home style reflects how he represents his constituents in Washington, a representation style that is regularly documented in Alabaman newspapers. Shelby invests his staff resources into the appropriations process and is widely recognized as one of the most powerful appropriators in Congress—particularly due to his position as ranking member on the Commerce, Justice, and Society Appropriations subcommittee. It is widely believed that Shelby’s switch from the Democratic to Republican party was catalyzed by Republicans offering Shelby a seat on Appropriations. Since obtaining the seat, Shelby has made the most of his position. Profiles of Shelby often call him the most powerful politician in Alabama and regularly attribute “Shelby’s influence” to his “ability to secure federal funding for Alabama and protect agencies that are important to the state” (Beyerle 2009*b*).

1.3 Representational Style

The cases of Jeff Sessions and Richard Shelby demonstrate the importance of measuring legislators' representational styles for understanding how legislators represent their constituents. Sessions and Shelby provide very different *kinds* of representation to their constituents: Sessions presents himself as the Senate statesman, Shelby as the appropriations ombudsman. These differences are obscured unless we extend our analysis of representation beyond roll call votes, to include how the senators *define* the representation they provide constituents and how the legislators use their institutional resources in Washington. As I will show in this book, the cases of Sessions and Shelby also demonstrate the strong connections between legislators' home styles and Washington styles: Sessions' home style reflects his work in Washington, while Shelby uses his institutional resources to create opportunities to maintain his appropriation based home style.

In this book I argue for a broader notion of representation that expands upon the predominant model of political representation. This model focuses entirely on one aspect of representational style—roll call votes—at the expense of exploring how legislators connect with their constituents in the district and how representatives invest their time in Congress. The focus on representation through roll call votes began with Miller and Stokes (1963) and quickly became the default definition of political representation. Much of the subsequent scholarship has maintained this assumption, arguing (at least implicitly, if not explicitly) that representation is solely about how well legislators' positions on roll call votes align with constituents' preferred positions on those votes (Achen 1978; Poole and Rosenthal 1997; Clinton 2006a).

Numerous, but disparate studies, have demonstrated that roll call votes are insufficient for describing how legislators represent their constituents (Eulau and Karps 1977; Hall

1996). The primary focus of these other studies is how legislators invest their time in Washington (Hall 1996; Sulkin 2005) or the types of constituency service provided (Cain, Ferejohn and Fiorina 1987). But these studies still leave little room for an explicit role for *communication* in the process of representation.

As the analysis of Sessions' and Shelby's representation demonstrates, communication is an important component of how legislators represent their constituents. Therefore, describing representation requires a description of a legislators' *representational style*: a diverse set of legislative activities, votes, and communications that occur both inside and outside the legislature and constitute the particular way a legislator anticipates, shapes, and responds to her constituents' preferences. Critically, representational styles include not just how representatives act while in Washington or how they vote on legislation, it also incorporates *how senators present this work to constituents outside of the Congress*. I demonstrate in this book, however, that the different components of representational style are all intricately intertwined, to create the particular kind of representation a member of Congress provides constituents.

In this book I demonstrate that legislators' home styles are important because they represent the primary connection between representative and constituents. Members of Congress use their home styles to frame their Washington styles and voting to constituents, allowing representatives to define their representational style to constituents. Representatives are able to define their styles because neither constituents nor the media are able to constantly monitor legislators' activities, and as a result members of Congress have the freedom to explain their work to constituents. Legislators selectively highlight activities constituents are likely to view favorably, in an effort to change *what* constituents expect of their representative (Fiorina 1977; Fenno 1978; Arnold 1992).

Legislators also anticipate that they will have to explain their activities in Washington to their constituents (Fenno 1978; Arnold 1992, Personal Interview). When considering how to invest their time and resources in the institution, members of Congress (and their staff) consider how constituents will react when informed about their representatives' activities (Fiorina 1977; Arnold 1992). Legislators seek out activities that allow them to bolster support among constituents (or key elements of their constituency) and help them to maintain the kind of representation they provide to their constituents. As a result, home styles are systematically related to legislators activities in the institution and even influence how bureaucrats build support for their agencies. This demonstrates that home styles are more than the "folksy" way members of Congress interact with constituents in the district. Rather, home styles have far reaching consequences for politicians and bureaucrats in Washington.

The examples of Shelby and Sessions illustrate how legislators use home style to define the kind of representation they offer to constituents and how a legislator's home style relates to their Washington style. Shelby's near constant focus on appropriations in his home style is an attempt to remind constituents of his work securing federal funds. To create this appropriation focused home style, Shelby switched parties to obtain a seat on the appropriations committee. Similarly, Sessions worked to become a leader in the battle over immigration reform, with Sessions anticipating that he would use the battle to bolster support among constituents. Of course, representatives' ability to influence constituents' evaluations is limited: constituents may be inattentive to their senators' statements or could have well established expectations from their representative. Further, a legislators' own career ambitions and interests often constrain how legislators define the representation they provide constituents and how they invest their resources in Washington. But, if we extend

the logic of political campaigns to the day-to-day interactions between constituents and legislators, then we should expect legislators to strategically emphasize their work in an effort to bolster support among constituents (Simon 2002; Sigelman and Buell 2004; Kaplan, Park and Ridout 2006).

In this book I introduce the first comprehensive, systematic, and verifiable measures of home styles. Home style is an important concept in the study of American politics, with hundreds of citations from a variety of studies. Yet, few scholars have actually studied home style, instead only noting the importance of home style when studying roll call votes or Congressional elections. I demonstrate this now using using a statistical model for texts to efficiently categorize the hundreds of articles that cite Fenno (1978).

1.4 The Neglect of Home Style

Upon the introduction of the idea of home style in Fenno (1978), it was almost immediately recognized as a path breaking contribution to the study of legislative politics. In one review, Kuklinski (1979) heaps on the praise stating that the “payoff, in terms of a contribution to the linkage literature, is substantial” (Kuklinski 1979, 132). As Kuklinski (1979) expected, home style has become one of the best established concepts in the study of American politics. With over one-thousand citations, Fenno (1978) is one of the most regularly cited books in political science (Google Scholar, accessed 8-1-09). And Home Style is present in most classrooms, regularly taught at both the undergraduate and graduate levels (Lipinski 2004).

But on a second measure, Home Style has been less influential. Given the anticipated importance of the work, Kuklinski (1979) predicts that “Home Style undoubtedly will move many scholars from the legislative chamber and the computer center to the district” (Kuk-

linski 1979, 132). In another review Davidson (1979) equals the praise of Kuklinski (1979), but is less sure that scholars will follow Fenno's (1978) lead and study legislative home style:

In this superb guidebook to the 'world of the shopping bags,' Fenno once again confirms his reputation as one of the best, perhaps the best, scholar of American politics. Quite properly, his book is reminiscent of those ancient explorers' maps, detailed in places but containing large blank spaces marked as 'unknown territory'. *The test of Fenno's perspicacity will be how rapidly, and how fruitfully, his colleagues rush to fill in those voids.* (emphasis added) (Davidson 1979, 586)

Applying Davidson's (1979) test, we find that Fenno (1978) fares poorly, with few scholars working to fill in the "large blank spaces marked as 'unknown territory' ". While Home Style is still regularly cited by scholars of Congress, it is usually to explain voting on legislation or the outcome of Congressional elections. Rarely do scholars engage the ideas originally introduced in Fenno (1978).

To demonstrate this surprising pattern—many studies citing Home Style but few actually engaging it—we need to review and summarize the massive literature that cites Fenno (1978). But providing an adequate review for this literature is a monumental task. Even if we restrict our attention to work that has appeared in major journals (and therefore available in the JSTOR archives) we still would need to read 377 articles, or about 13,500 pages of text. After reading the articles, we would then need to develop some way to organize them by theme, a monumentally difficult task (Grimmer and King 2009).

Instead of the labor intensive manual approach to a literature review, I employ a statistical model to efficiently organize the articles. The model that I apply here is related to the approach that I use to measure legislators' home style and demonstrates the utility of using statistical and algorithmic approaches for exploring the content of large collections of text.

Intuition Academic papers are a *mixture* of many different topics. Different scholarly works allocate more space to different topics: Clinton, Jackman and Rivers (2004) spends more time discussing statistics than Kingdon (1989), but Kingdon (1989) focuses more on interviews than Clinton, Jackman and Rivers (2004). And both Kingdon (1989) and Clinton, Jackman and Rivers (2004) allocate substantial space to explain how members of Congress vote. Extending this idea, we can summarize the contents of articles by measuring the proportion of a document that discusses different topics.

Applying this basic idea—documents as a mixture of topics—I use *Latent Dirichlet Allocation* (LDA) to compare how often different topics are discussed in the literature that cites Fenno (1978) (Blei et al. 2003). LDA simultaneously estimates the proportion of each document allocated to each topic and the topics in the collection of scholarly articles. I applied LDA to the set of 377 papers that cite Fenno (1978).¹ To illustrate how the attention to topics have changed since 1978, I created an “average” document for each year by averaging the proportion of documents discussing each topic. I then described the trend in attention to a subset of interesting topics in Figures 1.1 and 1.2 using a nonparametric regression.²

Figure 1.1 shows that attention to the concepts that comprise Home Style has dropped dramatically since 1979 in articles that cite Fenno (1978). The left-hand plot shows the average proportion of articles that cite Fenno (1978) dedicated to exploring the Congressional life-cycle hypothesis: a conjecture that legislators home styles change gradually, with legislators slowly investing more resources in Washington and less staff and time in their district. The plot shows that this hypothesis initially received a great deal of atten-

¹I downloaded the article data from <http://dfr.jstor.org>. See Appendix A for a formal statement of LDA’s data generation process and more details about how I used LDA to perform the literature review.

²This represents a two-step version of the single model advanced in Blei and Lafferty (2006). The trends for all topics are contained in the replication code.

tion, but subsequent studies have allocated it less space. Likewise, the center-plot shows how attention to home style in a comparative context has dissipated. And the right-hand plot shows how attention to constituents through representation other than roll call votes—casework especially—receives significantly less attention now than in 1979.

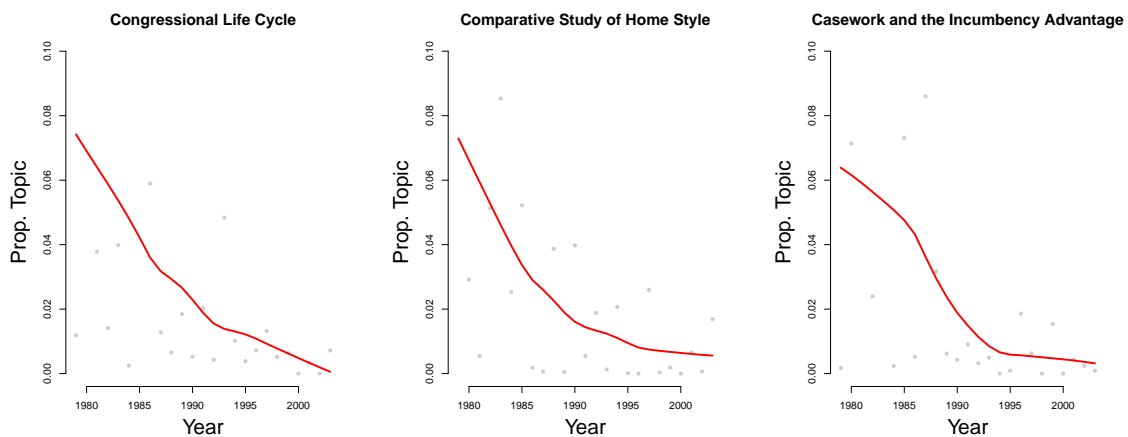


Figure 1.1: The Decline of the Study of Home Style

This figure shows articles that cite Fenno (1978) allocate little attention to home style. Scholars who cite Fenno (1978) now spend little time analyzing three key ideas from his work.

With attention drifting away from topics introduced in Fenno (1978), Figure 1.2 shows that articles that cite Home Style now allocate much more space to analyzing roll call votes and mass political behavior. The left-hand plot in Figure 1.2 shows that articles citing Fenno (1978) spend considerably more time now describing the causes of Congressional voting decisions. Similarly, the center-plot shows that scholars interested in ideological shirking use Fenno’s (1978) idea of constituencies in concentric circles to explain the ideological divergence of senators from the same state.³ And the right-hand plot shows that

³This spike is due to a series of articles in *Public Choice*. For example, Fort et al. (1993) explores whether legislators have “Different Principles or Different Principals”.

scholars citing Fenno (1978) are also more likely to be discussing political behavior related questions.

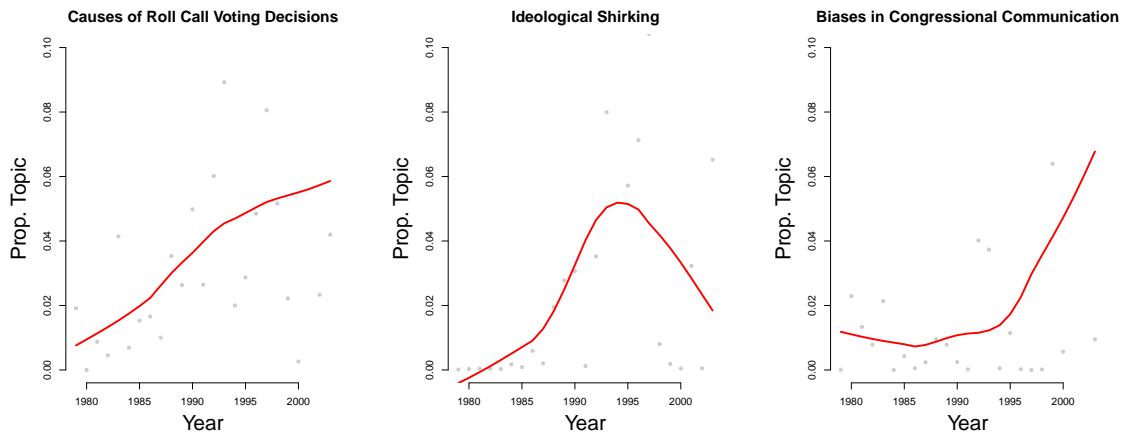


Figure 1.2: The Rise of the Study of Roll Call Votes

This figure shows that scholars now cite home style studying issues related to Congressional voting decisions or when studying questions related to mass behavior.

Taken together Figures 1.1 and 1.2 show that Fenno (1978) is regularly cited, but not because scholars are engaging the ideas of Home Style. A manual reading of the broader literature on representation in Congress suggests that this finding reflects the literature's primary focus on roll call votes. Since the invention of Poole-Rosenthal scores (and related methods for estimating legislative ideal points) scholars have focused considerable attention on explaining how legislators vote on legislation and developing new methods to describe the structure of conflict in Congress (Poole and Rosenthal 1997). The few studies that have engaged home style are forced to use imperfect data and labor intensive measurement methods, limiting inferences to an unrepresentative subset of legislators (Schiller 2000; Lipinski 2004; Sulkin 2005). In the next section, I describe the substantial obstacles to studying home style and its consequences.

1.5 Why the Neglect: A Lack of Tools and Data

There are two major obstacles to studying home style: the difficulties in collecting data and a lack of methods to efficiently analyze what legislators say to constituents. Collecting data on how legislators interact with their constituents has required a substantial investment of resources. Fenno (1978) followed 18 members of Congress over 8 years, making numerous trips to their districts. And after this significant investment of time, money, and effort, Fenno (1978) was still only able to obtain imperfect measures of home style, collected from an unrepresentative subset of legislators who were observed on only a few days.

Even if we were able to collect data on all legislators' home styles, analyzing the abundance of statements, speeches, and actions would require immense resources. The methods used to measure home style have not progressed much since Fenno (1978) and still require observing members of Congress, manually reading their statements, and sorting, difficult tasks for even expert coders (Grimmer and King 2009). As a result, it is essentially impossible to gain an understanding about how all members of Congress engage their constituents using existing methods and data.

In this book, I will introduce statistical methods and data to overcome these obstacles, providing comprehensive and systematic measures of senators' home styles. Using the measures of home style, I demonstrate its fundamental importance for representation: home style allows legislators to influence how they connect with their constituents, reflects what representatives do in Washington, and is systematically related to the policy outputs of government.

In Chapter 3 I introduce the data set I use to measure home style: a comprehensive collection of Senate press releases. The collection includes every press release, from each Senate office from 2005 to 2007, a collection of over 64,000 press releases. I demonstrate

that press releases are an important medium for measuring how legislators communicate with their constituents: they regularly reach constituents through local newspapers and are an important venue for legislators to claim credit for federal funds.

Because of the limitations of existing methods for measuring home style, I introduce a new Bayesian statistical model for political texts, which I introduce in Chapter 4. I focus on legislators' expressed priorities, which I argue constitute the *verbal* presentation of self, one of the most important elements of a legislator's home style (Fenno 1978). The statistical model I introduce simultaneously estimates the topics in the press releases and the attention legislators allocate to those topics. Further, the model estimates a *typology* of representational styles, demonstrating a tension between credit claiming about appropriations and discussing substantive issues, a tension first observed in Fenno (1978). Through a series of validations, I demonstrate that the model is able to capture politically meaningful expressed priorities and topics in the press releases, while also out performing state of the art nonparametric statistical models for text. In an extended methods appendix (located in Appendix A) I demonstrate how I use a variational approximation—a deterministic alternative to sampling based approaches to Bayesian inference—to overcome the substantial limitations MCMC and related algorithms face when applied to statistical models like the one I introduce.

Before outlining the evidence for home style's importance for political representation, the next chapter explains why communication outside of Congress should occupy a central place in the representation process.

Chapter 2

The Central Role of Home Style in Political Representation and Representational Style

Abstract: How legislators present and explain their work to constituents, representatives' home styles, is a central component of representational style. Home style is important on its own as a crucial connection between representatives and constituents: representatives use their home styles to *define* the type of representation they provide to their constituents. Home style is also important because it is a credible indication of legislators' representational style. Representatives will use their home styles to highlight activities that will *resonate* with their constituents and may seek out activities in Washington that constituents will view favorably. This has two important implications. First, legislators' home styles will be associated with other activities in the institution, providing a useful indicator for representatives' broader representational style. Second, members of Congress will value the opportunity to discuss certain topics with constituents, a fact that some agents of Congress will use to be responsive to their Congressional principals. Home style, therefore, is much more than the folksy way that members of Congress interact with constituents in the district. Instead, home style captures how legislators and staff strategically use their institutional resources to develop a public image and convey their activities to constituents.

2.1 Introduction

The most important decision a member of Congress will make is deciding how to represent their constituents: how to be *responsive* to the public (Eulau et al. 1959; Pitkin 1967; Mansbridge 2003). When arriving in Washington a newly elected representative faces an astounding number of choices. Of course, the new member of Congress will have to decide how to vote on pending legislation. But, she also must decide what committee assignments to request, how often to participate in those committees once assigned, what new bills to introduce, what bills to cosponsor, how many staff members to hire, and where to allocate those staff. Then, she is expected to explain the choices to her constituents, using newsletters, mass mailings, emails, press releases, and even social networking websites. Taken together, these diverse choices constitute the type of representation she provides to her constituents.

Five decades of scholarship has recognized the difficult choices that members of Congress face when deciding how to represent constituents and has examined *how* legislators are responsive to constituents in Washington (e.g., Eulau et al. 1959; Miller and Stokes 1963; Achen 1978; Griffin and Newman 2005).¹ The goal of this work is to measure *reflection*: how well legislators translate their constituents' preferences into actions in the institution. But these studies of reflection adopt a very narrow definition of what constitutes representation, focusing exclusively on whether legislators' roll call votes reflect constituents' views (Miller and Stokes 1963; Achen 1978; Griffin and Newman 2005).

It is this narrow focus on roll call votes that I argue needs revision. In this chapter, I argue that the prevailing focus on votes leads to an overly simplistic model of the policy and representation process. To describe how legislators are responsive to their constituents, we

¹A much longer tradition examines how representatives *should* balance these considerations.

need to adopt models that provide for an explicit role for the wide variety of activities legislators use to both appear and to be responsive to their constituents. Beyond roll call votes, members of Congress engage in important work in Washington, and crucially, present and explain their work and votes to constituents. The set of choices members of Congress make when casting votes, working in Washington, and communicating with constituents—and the relation between those choices—comprise representatives' representational styles, or the particular set of choices legislators make when representing constituents in Washington.

While numerous studies have documented that policy responsiveness is central in representation, few studies of representation identify and explicate a role for communication in understanding how members of Congress represent their constituents. This is surprising, because representatives spend so much time and money to connect with constituents. One reason for this lack of attention is the view that communication is “cheap talk”: costless to produce, devoid of content and therefore easily dismissed by constituents (e.g., Austen-Smith 1990).

I will show, however, that congressional communication is far from cheap talk: communication is centrally important for understanding how legislators represent constituents. The importance of communication emerges because neither constituents nor the media are able to constantly monitor what members of Congress do while in Washington. Members of Congress will emphasize those activities that are likely to resonate with their constituents, will seek out activities they can positively report to their constituents, and attempt to bury votes or assignments that will enrage key sub-constituencies. As a result, how members of Congress present and explain their work to constituents will be important on its own, representing the primary tool elected officials use to create connections with constituents. Home styles are also important because they are systematically related to what members

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of Congress do in Washington. Therefore, home styles provide a credible indicator of legislators' representational styles.

In this book, I modify the original conceptualization of home style, modifying it to include how legislators create a public image using impersonal means, not just the personal encounters with constituents emphasized in Fenno (1978). While the concept of home style that I develop and analyze shares many important characteristics of the concept first analyzed in Fenno (1978) (which I demonstrate empirically in Chapter 5), it also addresses limitations in the original conceptualization. Home style was originally conceptualized as the folksy mannerisms that members of Congress use when directly interacting with their constituents in the district. There are two ways in which the folksy-personal home style is too limited for understanding how elected officials connect with constituents. First, constituents usually learn about their member of Congress through impersonal means—newspaper reports, letters from the member of Congress, or coverage on the local news. The highly personal interactions described in Fenno (1978) are the exception. Second, senators and their staff are extremely strategic when deciding how to construct a senators' home style. Senators make carefully considered decisions about how often to claim credit for grants in a state and the proper time to take a position on a controversial foreign-policy issue. These careful decisions are much more likely to reach constituents than the personality driven styles that were detailed in Fenno (1978). Directly interacting with constituents is still an important way for representatives to connect with the public, focusing on these direct interaction alone ignores the activities that are most important for understanding how elected officials connect with constituents.

An explicit role for home style and communication represents a substantial departure from existing models and conceptualizations of representation, particularly those analyzed

in quantitative studies. In the next section, I explain why focusing on roll call votes alone is insufficient for describing how representation occurs.

2.2 Why Roll Call Votes are Insufficient

Reflection is the prevailing definition of representation (Miller and Stokes 1963; Erikson 1971; Achen 1978; Clinton 2006a). But the specific notion of reflection adopts an extremely narrow focus, equating reflection with legislators' roll call votes aligning with constituent preference. The unintended result is an extremely basic model of the policy process in Congress.

To see this, consider the implicit model of policy making that these studies assume. Constituents are theorized to have fixed preferences on a set of issues (Miller and Stokes 1963; Achen 1978), or an ideal point in policy space that describes their general preference over policy (Clinton 2006a; Bafumi and Herron 2009). Legislators are then asked to vote on a set of exogenously determined roll call votes, a subset of which are often assumed to be “important” for constituents' evaluations of their representative (Canes-Wrone, Brady and Cogan 2002). Constituents use the votes cast to evaluate the representation they are receiving in Congress. A “responsive” member of Congress has opinions closely aligned with their constituents (Achen 1978). Less responsive legislators deviate from their constituents' preferences and only reflect key subconstituencies (like the wealthy or educated) (e.g., Bartels 2002, Griffin and Newman 2005, and Griffin and Newman 2007) or “shirk” and deviate from their constituents opinions in general (e.g., Rothenberg and Sanders 2000).

There are few theoretical or empirical reasons to justify why this simplistic model of reflection is sufficient to justify it as a measure of representation (Eulau and Karps 1977). Indeed, I will show below that it misses a wide range of activities that are central in rep-

resentation. The prevalence of this definition of representation is attributable to assumptions made in an early study of representation and readily available data on senators' roll call votes. Miller and Stokes (1963), an early landmark study in representation, laid out the assumptions that have come to dominate the literature on representation. To measure representation, Miller and Stokes (1963) used a survey of both constituents and members of Congress and then examined the correspondence between House members' votes and constituent opinions on three issues, conflating correspondence with representation (Miller and Stokes 1963). With little justification, this soon became *the* definition of representation used in the literature. Subsequent studies enthusiastically made the same assumptions, either employing the same data to measure "representation" (Erikson 1971; Achen 1978; Hurley and Hill 2008) or employing the same basic design (Clinton 2006*a*; Bafumi and Herron 2009) to compare the preferences of constituents and the recorded votes of legislators (see Eulau and Karps (1977) for an extended critique of these assumptions).

The focus on floor votes is also partially attributable to readily available roll call data from the entire history of Congress. This has fostered numerous studies about roll call voting, including: the determinants of roll call votes (Levitt 1996; Snyder and Groseclose 2000), how voting patterns change over a legislators' career (Poole 2007), and how parties affect roll call voting decisions (McCarty, Poole and Rosenthal 2002). Low-dimensional summaries of call voting histories are used to test a variety of theories of policy making and agenda control (Cox and McCubbins 1993; Krehbiel 1998).

Roll call votes have become so dominant in the study of Congress that some studies conflate the whole of Congressional action with patterns observed in roll call votes. Rosenthal and Poole (1985) and Poole and Rosenthal (1997) argue that Congress is "unidimensional", citing the high percentage of variance in roll call votes explained by a one-dimensional ideal

point estimate. Although this explains only unidimensional and stable behavior in how senators vote on legislation, they argue that their findings have broader interpretation for the nature of ideological competition in America (Rosenthal and Poole 1985, 2). Similarly, Lee, Moretti and Butler (2004) seeks to identify the effect of elections on policy outcomes in Congress. But to measure the effect of the elections on policy outcomes, Lee, Moretti and Butler (2004) examine *only* roll call votes as sufficient to identify the total policy effect of election.

Unfortunately, while numerous representation studies have adopted the focus of Miller and Stokes (1963) on roll call votes and studies of Congress follow Rosenthal and Poole (1985) and study Congress through roll call voting, no study has offered convincing evidence that roll call votes are sufficient to understand how representation occurs and policy created. Certainly, roll call voting is an important *component* of representation, but on its own the prevalent focus on reflection through roll call votes implies too simplistic a model of policy making and ignores or obscures numerous other activities senators employ to be responsive to their constituents. To see why the restriction to roll call votes poses a theoretical problem, I now explicate some ways previous studies have demonstrated how legislators use their work in Washington to be responsive to constituents.

2.3 Work in Washington

Focusing solely on roll call votes leads to an incomplete characterization of representation because legislators are able to respond to their constituents in many ways other than casting votes on the House and Senate floor. For example, legislators introduce new legislation and cosponsor bills to indicate their strong support, hold and participate in committee hearings about new bills or to regulate wayward bureaucracies, participate in bill markups, introduce

amendments to bills once they reach the floor, attempt to obstruct legislation or political appointees through procedural maneuvers, and even introduce legislation to commemorate and honor prominent constituents. These examples—and many others—describe legislators who are providing representation beyond roll call votes.

These activities have measurable effects on the types of policies that are enacted and the effects are usually undetectable using roll call votes. For example, Hall (1996) demonstrates that legislators focus on bills that have large and direct effects on their constituents. Legislators whose constituents are directly affected by a bill tend to participate more often in bill markups, offer more amendments, and are more engaged in committee hearings. The result is that the legislators move policy towards their constituents' preferred bill and away from the majority preferred proposal. More generally, how legislators invest their time in the institution can also represent an important way that members of Congress respond to electoral pressure. Sulkin (2005) shows that legislators allocate more attention to the issues raised by opponents in elections, to address potential weaknesses before the subsequent elections.

Roll call votes are also unable to describe *what* issues receive attention in Congress and what bills are given consideration on the floor. And the power to set the Congressional agenda is also a crucial component of representation (Kingdon 1984; Baumgartner and Jones 1993). In the House, leaders of Congressional parties use their negative agenda control to deter fractious issues from reaching the floor (Cox and McCubbins 1993). Senate rules are designed to encourage debate, offering senators a multitude of dilatory tactics to prevent or severely delay the consideration of new legislation (Wawro and Schickler 2006). When and how senators employ these tactics constitutes an important kind of responsiveness to constituents.

Members of Congress use their power to offer appropriations to secure pork for their districts and their institutional resources to provide constituency service. Both are important activities for representation and both are activities missed using roll call votes. Legislators leverage their positions on key committees in order to secure more funds for their constituents. This is a crucial kind of responsiveness for constituents—money from the federal government can buoy local industries, lead to new infrastructure, and improve schools. The focus on roll call votes also ignores how legislators use their positions to directly assist constituents. Cain, Ferejohn and Fiorina (1987) demonstrates that the public expects representatives to provide *constituency service*: legislators using their positions to help constituents navigate the complicated federal bureaucracy (Fiorina 1977).

Numerous disparate studies rebut the claim that roll call votes alone are sufficient for describing how legislators are responsive to their constituents. But, all of the studies focus on legislators' activities in the institution. I argue that communication between constituents and legislators is also critical for understanding how representation actually occurs. In the next section, I describe why legislators' home styles are crucial component of representation.

2.4 Home Style and Representation

Most theories of Congressional representation and legislative behavior implicitly assume that legislators and their constituents interact very little during the legislative session. Members of Congress work in Washington—they cast votes, author legislation, or hold committee hearings. But, legislators do nothing to highlight these activities to constituents. Rather, attentive interest groups and the media are assumed to effectively monitor legislators' activities (Arnold 1992). Constituents, in turn, passively learn about these activities (although

the mechanism for this learning is rarely specified or assumed to be through elections). Legislators are afforded few, if any, means of *educating* their constituents about their representatives' activities in the institution, except during the Congressional election.

Leaving unspecified how constituents learn about their member of Congress is problematic for theories of representation and leaves as a puzzle why legislators spend so much money and effort explaining their work to constituents. To see why, consider how constituents inform themselves of what their legislator is doing in Washington. If information were costless, constituents could monitor what elected officials do, observe their elected officials' choices, and then evaluate how well the choices align with the constituents' own priorities and preferences. If this were the case, legislators would be able to exclusively focus on votes and their work in Washington and communication would serve little purpose in the process of representation. After all, constituents would already know about what their representative did in Washington.

But information about what legislators are doing in Washington is far from free. As a result constituents rarely invest the time to learn about their representatives' activities in Washington. Constituents are often too busy and too uninterested to learn their representative's name—let alone what a member of Congress did during a sub-committee hearing or about the small \$10,000 grant secured for the local fire department. Even the most attentive citizens are only able to observe a small set of the most prominent actions. As a result, even the most responsive legislator would go unnoticed by constituents.

We might expect that other actors—the news media and interest groups—are able to monitor more effectively than individual constituents. But, both groups face serious resource constraints that hinder their ability to hold legislators accountable. The decline of the print media and constraints on local news organizations makes it exceedingly difficult for small

news outlets to provide in-depth coverage of Congressional activities. Small newspapers and local television stations are forced to rely upon pool reports, shared Washington bureaus, or do not provide readers with any original coverage of Congress (Vinson 2002; Arnold 2004). Interest groups face similar constraints and are forced to rely on similar information sources to inform the group members about how members of Congress are performing.

The limited monitoring of constituents and the limited capacity for media coverage creates the opportunity for members of Congress to use their institutional resources to explain their activities in Washington. All else equal, members of Congress emphasize those activities that will resonate with the target audience and avoid discussing difficult decisions that are not well supported by key sub-constituencies. But this ability to selectively emphasize activities also has consequences for what members of Congress do while in Washington. They will seek out committee assignments, take positions on votes, and introduce bills that will allow them to communicate positive messages to their constituents. Indeed, this a crucial reason that members of Congress seek out appropriations money for their district. Members of Congress value the opportunity *claim credit* for the particular pieces of legislation.

Given the freedom that members of Congress have to explain their work to constituents, we *do not* want to study the positions legislators take in their public statements. Rather, we want to study the positions legislators *decide* to take in their press releases. The *topics* that legislators discuss in their public statements and the *priorities* they express will comprise the crucial components of home style relevant for understanding how legislators represent their constituents in the institution.

2.5 A Road Map for the Book

Sections 2.2 and 2.4 outline the argument for a broader characterization of representation. While a large literature characterizes representation solely through legislators' roll call votes, they have many additional tools for responding to their constituents. Beyond the votes on the floor of the House and Senate, legislators use their positions in the institution to shape policy and secure particularistic goods for their state. Legislators also present and explain their work to constituents outside of the institution.

In this book, I will demonstrate that this communication, legislators' home styles, are central to their representational style. The way legislators communicate with constituents is important on its own, because it represents the primary tool legislators use to define the type of representation they provide constituents. This reveals the diversity in the types of representation legislators provide their constituents, in addition to the stability in representational styles and the similar issues emphasized across parties. Home styles are also important because they are systematically related to what legislators do in the institution. I demonstrate that home styles provide a credible signal of what legislators do in the institution and that other actors cultivate support in Congress by creating opportunities to discuss specific topics.

I now outline the argument and the evidence used to demonstrate home styles' importance for representation.

2.5.1 A Diverse, Stable and Nonpartisan Home Style

When legislators define the type of representation they provide constituents, they define diverse, stable, and nonpartisan home styles. Combined together these three properties reveal that legislators have multiple and slowly changing goals in the institution. The result

is that each senator provides a *type* of representation that changes little from year to year.

In Chapter 5 I demonstrate that there is important diversity in how legislators communicate with their constituents, providing evidence of senators' many goals and motivations. Formal models of legislative behavior predict that reelection motivated legislators have a dominant strategy to focus on appropriators and constituency service and avoid substantive issues (e.g., Fiorina 1977). This chapter examines the *types* of representation legislators provide and reveals a more complicated reality. Some legislators conform to formal theoretic expectations and focus extensively on appropriations when explaining their work to constituents. But other senators focus on major national issues, behaving like prototypical Senate "statespersons". This diversity reflects senators' multiple goals when representing constituents in Washington.

While there is diversity across senators' home styles, individual senators adopt only one type of representation. Chapter 6 shows that a senator's home style changes little from year-to-year and that the biggest changes in home styles are the result of replacement. Combined with interview evidence, I argue that this demonstrates that senators now feel pressure across the entire term in the Senate to anticipate electoral threats and to maintain their positions of prominence within the institution. The result is that constituents receive only one *type* of representation when they elect a member of Congress. To receive a different type of representation, constituents need to vote that representative out of office.

Home styles also reveal that Democrat and Republican senators provide representation on the same topics. In contrast to expectations from issue ownership theory (Petrocik 1996), Republican and Democrat senators discuss the same topics in their press releases. This is the consequence of two important factors. First, senators from both parties can benefit by claiming credit for federal funds. Second, senators from both parties recognize

the cost of allowing the other party to dominate debate on a topic. But when the parties discuss the same issue they offer different positions, demonstrating that the parties satisfy a necessary condition for responsible party government.

2.5.2 Not Cheap Talk: A Valued and Credible Indication of Representational Style

Home styles are also important because they are systematically related to what senators do in Washington, a connection missing from the original study of home style in Fenno (1978). This correspondence provides strong evidence that legislative communication is credible and not cheap talk. Home styles are not cheap in two ways. First, legislators value opportunities to claim credit for federal funds. Bureaucrats recognize this and are responsive to members of Congress by creating credit claiming opportunities: the opportunity to credibly announce some grants represents a currency bureaucrats use to build support for their program. Second, senators' home styles provide credible information about how legislators will vote in Congress. I demonstrate that senators' home styles are able to predict controversial and otherwise difficult to predict roll call votes in the Senate.

Chapter 8 shows that members of Congress attach value to announcing grants allocated to their states. Senators regularly claim credit for grants allocated through a competitive program that neither senators nor bureaucrats are able to manipulate. But, bureaucrats are able to manipulate the way grants are announced, funneling announcements to Congressional offices. In interviews, agency officials indicated that this was the primary tool they used to cultivate congressional support for their agency.

Home styles also provide credible information about senators' behavior in Washington. Chapter 9 shows that senators' home styles predict a set of controversial roll call votes

that are otherwise difficult to explain, even after conditioning upon legislators' ideal points. This indicates that what legislators say to their constituents reflects what they do in Washington: legislators articulate a coherent representational style, that induces a correlation between senators home styles, work in Washington, and votes on the floor.

In the subsequent chapters, I will broaden the arguments outlined here and demonstrate that legislators expressed priorities—their home styles—are a central component of representation, important both on its own and because it is connected with activities in the institutions. But the conceptualization of home style that I develop is not identical to the concept of home style first analyzed in Fenno (1978). In the next section I justify this modification. I contrast the concept of home style I analyze against the conceptualization in Fenno (1978) and argue that the differences are an advantage of my definition, capturing capturing how constituents are actually going to learn about their representative.

2.6 A Public Image: Modifying the Concept of Home Style

The concept of home style is often conflated with tools and sample first used to measure it.² As mentioned in Chapter 1, Fenno (1978) developed the concept of home style and measured legislators home styles through intensive participant observation: following a small subset of representatives in their districts, observing their personal interaction with constituents, and how the representatives conducted themselves during meetings. Intensive participant observation is an important method for observing how legislators interact with constituents, but it also focuses attention on the ways members of Congress create *personal*

²Perhaps more than any other concept in American politics, home style is also closely tied to its originator. A goal of this book is to make the concept something more than the one time contribution of an amazing study conducted by a great Congress scholar. Rather, I seek to create a conceptualization that leads to systematic and replicable measures of home styles that are disconnected from the method of measurement.

connections with constituents and often focuses attention on the *folksy* way some representatives connect with their constituents.

In this book, I will use senators' expressed priorities to measure home styles. Before describing the differences with the original conceptualization that this implies, I will describe the similarities between this conceptualization and the original developed in Fenno (1978), explaining why the two measures will likely share important properties.

2.6.1 The Verbal Presentation of Self: Home Style and Expressed Priorities

Expressed priorities are important tools for senators when they are “presenting themselves” to their constituents. Fenno (1978) identifies the presentation of self as the “centerpiece of home style” (Fenno 1978, 60). According to Goffman (1959) a “presentation of self” occurs when actors communicate with their audience. For legislators, *presentations of self* constitute the way legislators use verbal and non-verbal cues to relate with their constituents (Fenno 1978). Expressed priorities constitute an important element of the *verbal presentation of self* (Goffman 1959; Fenno 1978). Through the issues legislators raise when they communicate with their constituents they *define* the kind of representation they offer to their constituents. For example, in Chapter 1 I described how Richard Shelby focuses on announcing appropriations and grants and therefore presents himself to constituents as the purveyor of federal funds (Eulau and Karps 1977). Other legislators, like Jeff Sessions, focus more on national policy issues, presenting themselves as responsive to the policy interests of their constituents.

Fenno (1978) regularly uses legislators' expressed priorities to describe the legislators in his sample, focusing on *what* legislators decide to discuss with constituents when they

return to the district. Critically, Fenno (1978) rarely describes legislators based on their ideological orientation. For example, Fenno (1978) describes one representative as someone who “talks a great deal about public policy...[m]ostly defense policy”, while a second representative focuses on issues to “present himself...as issue oriented and independent” (Fenno 1978, 69, 81). In contrast, a “service-oriented” representative, describes his focus in public speeches on “the dams, the highways, the buildings, the casework” or the non-policy topics, leading the representative to state “I’m identified for my interest in local problems” (Fenno 1978, 107).

Expressed priorities are central to the presentation of self and therefore to home style. But of course, there will be activities that Fenno (1978) observed and described that I will not be able to capture using senators’ expressed priorities. Expressed priorities do not offer much insight into the non-verbal presentation of self (Goffman 1959), or the way legislators allocate their resources to their districts (although the expressed priorities may explain why senators use their staff in a particular way). Expressed priorities also capture how legislators *explain* their work to constituents—indeed the verbal of presentation of self and the explanation of Washington activity are often conflated (Fenno 1978, 136-137).

The expressed priorities analyzed in this book also capture more than the behavior originally analyzed in Fenno (1978). I now describe why this expanding conceptualization is advantageous.

2.6.2 An Impersonal and Strategic Home Style

The folksy mannerisms that legislators use to create personal connections with their constituents is certainly important, but it is unlikely to be the source of information constituents use to learn about their member of Congress. To demonstrate this, Figure 2.1 presents the

percentage of respondents from the 1978-1994 American National Election Study (ANES) who had different levels of interaction with their member of Congress.³ Figure 2.1 shows some contact with members of Congress is likely. The left-hand bar shows that more than 75% of respondents have had some contact with their representative.

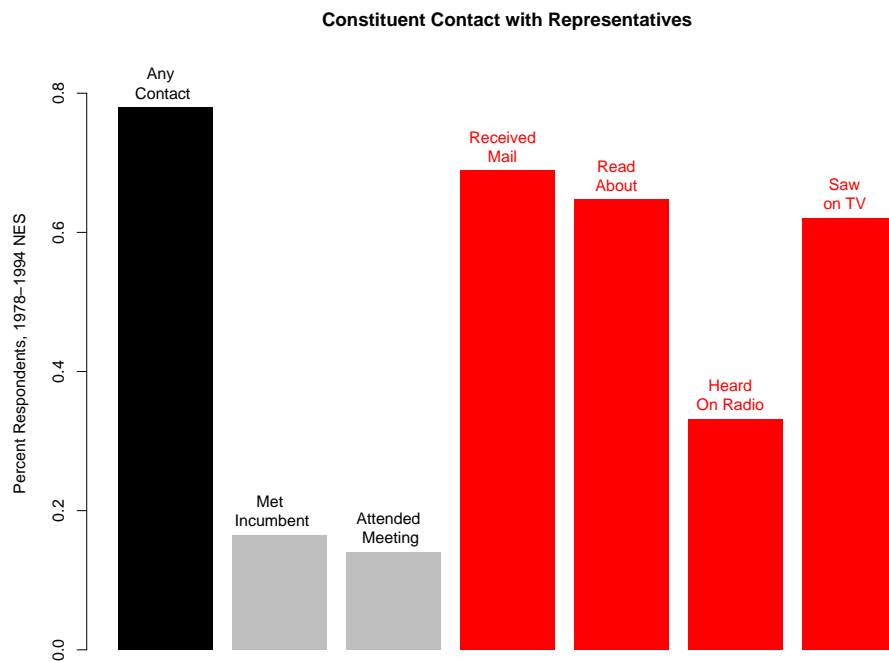


Figure 2.1: Constituents Learn About Legislators Through Impersonal Means

This figure shows that constituents have regular contact with their member of Congress. This contact, however, is rarely the personal and direct kind analyzed in Fenno (1978). Impersonal contact through mail, newspaper stories, or television coverage is more likely. This demonstrates the need to expand the concept of home style to include other activities than those analyzed in Fenno (1978).

But the contact that constituents have with their representative is rarely the personal connections documented in Fenno (1978). The gray bars in Figure 2.1 show that only

³The questions ask if constituents have had any contact with incumbents running for office. Therefore, we might expect that these figures represent an upper bound on the type of contact constituents would have with incumbents who are retiring or running for a different office.

a small percentage of respondents in the ANES sample had personal contacts with their member of Congress. Only 17% of respondents have personally met their representative and only about 15% have attended a meeting run by their representative. Data from the Senate Election Study suggests a similar level of contact with constituents for senators. Oppenheimer (1996) shows that only about 8% of constituents in the most densely populated states have any sort of personal contact with their member of Congress. Even though the data are a bit dated, we should expect this pattern to persist or for there to be a decrease in personal contact with elected officials. As state population grows, senators and house members each have more constituents and as a result, should be less able to maintain the close personal connections often associated with home style.

When constituents have contact with their representatives, it is usually through impersonal means. The red-bars on the right of Figure 2.1 show substantially more respondents had impersonal contacts with their member of Congress. For example, nearly 70% of respondents had received mail from their house member (not surprising given the use of the frank in the House) and a slightly smaller percentage had read about their member of Congress or saw the representative on TV. Similarly high levels of impersonal contact have been found among senators, with about 70% of respondents to Senate election study receiving a piece of mail from their senator (Oppenheimer 1996).

Therefore, if we were to restrict our attention to the types of interactions first considered in Fenno (1978), we would miss many of the most important modes of contact between legislators and their constituents. The general pattern observed in Figure 2.1 was echoed by press secretaries in interviews. One Senate press secretary remarked that press releases, a very impersonal means of communication, represent the “corner stone” of his office’s strategy for communicating with constituents (Personal Interview). Several ex-

pressed the belief that to communicate with their state, they would need to use tools of mass communication—it simply was too difficult to communicate with constituents through small town hall meetings.

This is not to say that the personal interactions with constituents analyzed in Fenno (1978) are unimportant for representation or home style. Rather, Figure 2.1 demonstrates that the personal meetings represent only one small component of how legislators interact with their constituents outside of Congress. In this book, I focus on an impersonal means of communication—legislators’ explanations in press releases. An important extension of this work would compare the messages and style that legislators articulate in their press releases with how they conduct face-to-face interactions with constituents in the district, to provide a complete portrait of senators’ home styles.

A second unforeseen consequence of Fenno’s (1978) sample and measurement strategy is that home style is often portrayed as the “folksy” mannerisms that members of Congress adopt in their districts. For example, Fenno (1978) explicates in detail a flirtatious speech from “Congressman B” to a convocation of high school women. Other representatives emphasized the importance of chewing tobacco with their constituents, or identifying constituents by name. In each instance, home style is presented as the folksy way representatives interact with constituents, exclusively in the district. And this leaves unclear how these folksy home styles would translate into legislators’ activities in Washington.

Far from nonstrategic or personality driven, my interviews with Senate staff and the evidence I present in this book shows that legislators are strategic when constructing their home style and that how legislators present their work to constituents is recognized as important by other political actors in Washington. Senators and their staff carefully decide how to construct their home style. As a result, legislators articulate a stable home style that

is responsive to salient events. And legislators' home styles are closely connected to their work in Washington.

2.7 Conclusion

In this chapter, I have argued that roll call votes alone are insufficient for understanding how legislators respond to their constituents. Legislators can also be responsive to their constituents through work in Washington and crucially, can use their home styles to explain and educate constituents of their representatives' activities in Congress. Home styles are central to this broader notion of representation, providing a credible indicator of the types of representation legislators provide to their constituents. I have also argued that an impersonal and strategic home style is a necessary modification to the concept originally analyzed in Fenno (1978), because of the nature of contact between constituents and their representatives.

Throughout the rest of the book, I will demonstrate that this home style matters for representation in two ways. First, I will show that home style is important on its own, because it allows members of Congress to strategically define how they are responsive to constituents. To create this image, legislators adopt diverse and stable home styles that are not systematically different across the parties. Second, I will show that home style is important because it both reflects and affects what member of Congress do in Washington—a crucial connection missing from the original study of home style.

Before illustrating home style's importance, I describe my strategy for measuring home style across all senators. A combination of new data and statistical methods allows me to systematically measure senators' home styles, a previously infeasible task.

Chapter 3

Measuring Home Style in Senate Press Releases

Abstract: To provide comprehensive measures of senators' home styles, I introduce a new collection of over 64,000 press releases: every press release from each Senate office from 2005-2007. I demonstrate that press releases are a nearly ideal medium for measuring how legislators connect with their constituents outside of Congress. Using a nonparametric technique to identify words that distinguish two collections of texts, I show that senators are substantially more likely to claim credit for federal funds in their press releases than floor speeches. Press releases are also regularly used in the local press to cover Congress: some press releases are run verbatim in local newspapers, essentially providing legislators free advertising. Employing a new technique for measuring *uptake* of statements in the media, I show that some papers carry over 30% of a senator's press releases and even large newspapers rely extensively on senators' statements to cover Washington politics. This demonstrates that press releases are a critical conduit between senators and their constituents.

There are two major obstacles to studying home style: the lack of easily available data and powerful methods that allow for the systematic measurement of home style across all members of a legislature. To overcome these obstacles, I introduce data and methods that enable the efficient estimation of home style across all members of a legislature. I use an innovative data collection technique to assemble a massive new collection of Senate press releases—every press release from each Senate office from 2005-2007. I supplement this collection of texts with all floor speeches from the same time period. I demonstrate that press releases are an important medium for measuring legislative home style and are likely to reach constituents by appearing in local newspapers. Employing a nonparametric method for comparing collections of texts, I demonstrate that press releases and floor speeches differ in politically important ways—demonstrating the importance of analyzing both texts for understanding how legislators connect with their constituents. I now describe the problems associated with other commonly used sources for studying legislative home style and why they are less than ideal for systematically measuring home style.

3.1 Measuring Home Style: Existing Sources

Intensive participant observation—observing a legislator in person over several days—is the original method for measuring home style, employed in Fenno (1978). But the costs of *soaking and poking* to measure home style are substantial and preclude the systematic measurement of home style across all members of a legislature. Consider Fenno’s (1978) original study: the conclusions are based on observations from 18 members of Congress, during 36 trips, for a total 110 days of observations spread over 8 years. While a small sample relative to the total members of Congress over those 8 years, it is *extremely* costly in time, money, and other resources. Extending the sample to include all members of

Congress would require an army of researchers. Beyond the foreboding cost, the sample is unlikely to be representative of the population of legislators. Some members of Congress (if not most) are unreceptive to requests to be observed. Even for those representatives included in the sample, we can only observe their activities on a small subset of days. Other problems with systematic participant observation imply that, even when executed well, this methodology is unable to provide systematic and valid measurements of how representation unfolds outside of Congress. When observing legislators' behavior, the observer might distort the behavior of the objects of their observation (Fenno (1978) was aware of this problem and took steps to minimize it during his study). Other qualitative methods, such as interviewing staff are incredibly important for understanding why particular home styles are used (indeed, I use this evidence throughout this book), but rely upon the imperfect memory of humans and therefore are unable to provide a complete portrait of how members of Congress relate to their constituents.

Newsletters from congressional offices are another potential source for studying home style (Lipinski 2004). Newsletters are very important, constituting a critical conduit between representative and constituent. But, newsletters are extremely costly to collect and are issued less often than press releases, making them less than ideal for this analysis. A complete set of newsletters are only available through the franking office, and are only available in their original, undigitized, format.¹ Aside from the high cost of collection, they also are subject to more regulation than other forms of Congressional communication, because they are sent out using the franking privilege, limiting the issues members of Congress can raise in their newsletters. As a result, many public debates are unlikely to occur in Senate newsletters.

¹An important extension of this work would be to compare how senators' home styles differ in newsletters and press releases.

Stories from newspapers and other media are another potential source for studying legislators' home style. Newspapers are often used as transcripts for studying what legislators say to their constituents (Petrocik 1996; Schiller 2000; Simon 2002; Sigelman and Buell 2004; Sulkin 2005). While an important source for understanding how statements from political elites reaches the public, this conflates legislators' statements with the editorial decisions of newspapers—resulting in a polluted measure of representatives' expressed priorities (Kaplan, Park and Ridout 2006).

Therefore, previously used data for studying home style are limiting. Participant observation is too costly to measure all legislators' priorities, newsletters are too restrictive, and newspaper stories conflate editorial decisions with representatives' home styles. I now describe why press releases are a nearly ideal medium, avoiding the problem described with these data sources.

3.2 Why Press Releases

I employ a comprehensive collection of Senate press releases to measure legislative home style and then supplement this collection of press releases with floor statements. Press releases are an important medium for legislators to communicate with their constituents. Press releases' importance is exemplified by their regular use by each Senate office. From 2005-2007, the average Senate office issued 212 press releases *per year*—which translates into over 4 press releases *per week*. Figure 3.2 presents the average number of press releases a Senate office issues each year (from 2005-2007). This demonstrates that each Senate office issued numerous press releases a year and that press releases are a communication tool utilized by both Republicans (red) and Democrats (blue).

Press releases are also important because they are issued throughout the entire year,

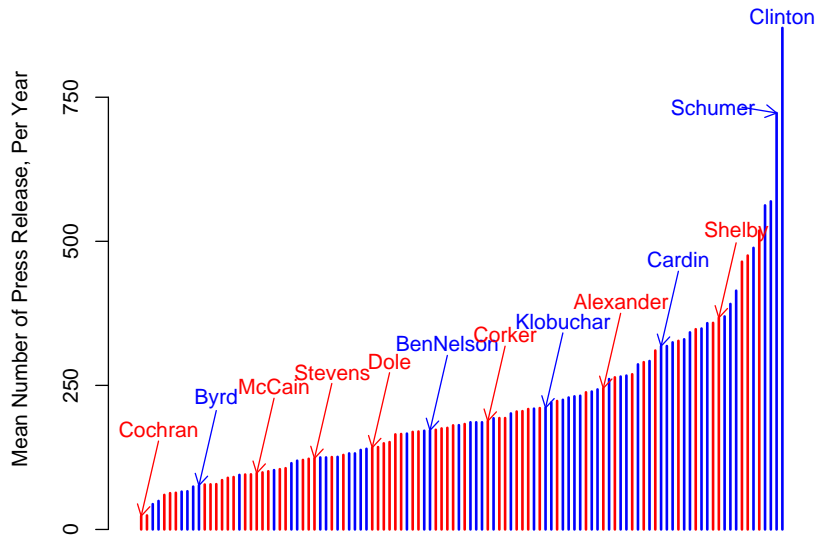


Figure 3.1: Press Releases are Regularly Used By Each Senate Office

This figure shows that press releases are regularly used by each senator. Each bar is the average number of press releases a senators office issued each year of the study. Both Democrats (in blue) and Republicans (in red) regularly issue a substantial number of press releases, with the average senator issuing about 230 press releases a year.

even when Congress is in recess. From 2005-2007 press releases were issued on 97% of the days, with the Senate, as a whole, averaging over 58 press releases issued *each day*. Figure 3.2 plots the number of press releases per-day for each day from 2005-2007. This demonstrates that press releases are used throughout the calendar year to communicate with constituents. Contrast this with newsletters, which are used more sparingly—often only a few newsletters are issued by each Congressional office, with very limited content in each newsletter (Lipinski 2004). One press secretary summed up the importance of press releases to the Congressional office when he said, “press releases are the cornerstone of our

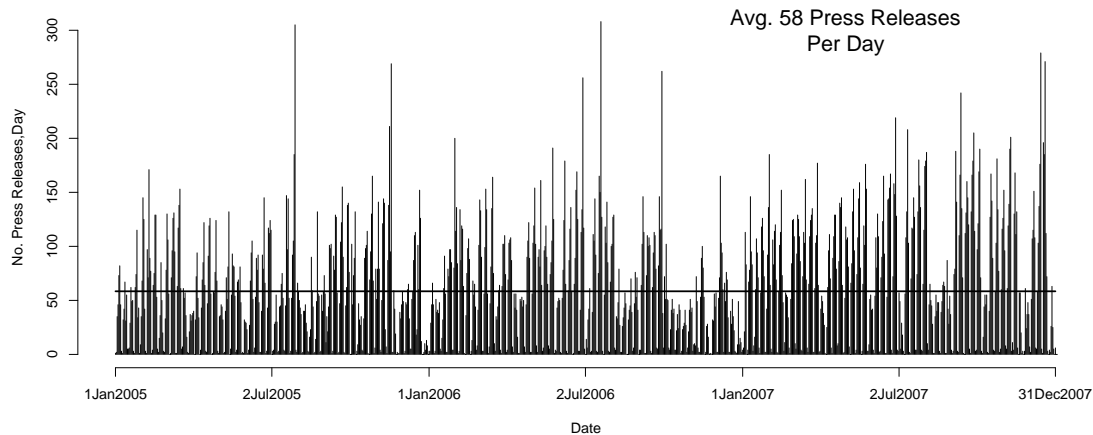


Figure 3.2: Press Releases are Regularly Used Throughout the Year

This figure shows the number of press releases issued each day (across the entire Senate), demonstrating that press releases are issued on nearly every day of the year. On average, 58 press releases are issued each day and at least one press release is issued on nearly every day of the year.

communication strategy” (Personal Interview).

Another advantage of press releases is that there are no *formal* constraints on what senators can say in their press releases, an important distinction with both newsletters and floor speeches. Further, senators are able to issue many more press releases than make floor speeches per day (even after for allowing senators to enter floor speeches into the record without actually reading the speech on the floor).

But floor speeches still represent an important source of legislators’ statements, so I will supplement the collection of press releases with each speech made on the Senate floor from 2005-2007.² Floor speeches are well established as an important medium for senators to communicate with their constituents. Perhaps most importantly, floor debates are tele-

²I define a *speech* as the text from a senator, uninterrupted by another senator. Therefore, interruptions from the chair would not result in a new speech being started, but banter between senators forms a new speech each one senator interrupts another. I collected the floor speeches from www.govtrack.us.

vised and available to constituents (although, likely to be seen by only the most attentive constituents). Floor speeches are a public way to signal how a legislator votes on a particular piece of legislation and provide a way for legislators to appear pivotal in the legislative process. And floor speeches are recorded in the Congressional record and easily accessible for the inquisitive constituent or opponent in future campaigns.

Floor speeches have received substantially more attention than press releases in the literature on Congressional speech (recently, for example see, Hill and Hurley (2002) and Quinn et al. (2010)) and one might expect that press releases and floor speeches would provide similar perspectives on senators' expressed priorities. I now show that press releases and floor speeches convey distinct political content: senators rarely discuss appropriations secured for their state in floor speeches, but regularly discuss appropriations in press releases.

3.2.1 Comparing the Contents of Floor Speeches and Press Releases

To compare the contents of press releases and floor speeches, I identify words that distinguish press releases from floor speeches. I employ a nonparametric tool from information theory to identify words that predict whether a document is a press release or a floor speech: the mutual information between words and document type. For intuition, suppose that we randomly select a document and guess whether it is a press release or a floor speech, representing a baseline level of uncertainty (at a maximum if the number of press releases and floor speeches are equal). Now, suppose we are given additional information: whether a word appears in a document. Conditional on this information, we can make a more informed guess, reducing our uncertainty from the baseline case. We will call the amount of uncertainty reduction the mutual information between that word and the type of document.

The greater the mutual information, the more uncertainty is reduced and therefore the more a word distinguishes between press releases and floor speeches. A formal description of mutual information is given in Appendix A.6.

Figure 3.2.1 presents the mutual information of each word with document type.³ The vertical axis presents the mutual information between the words and the collection of texts. To more quickly identify the distinguishing words, each word's size is proportional to its mutual information. The horizontal axis separates words that are used more often in press releases (further left) from speeches (further right). Words that are in the upper left-hand corner are words that distinguish press releases and floor speeches but are more common in press releases, words in the upper right-hand corner distinguish press releases and floor speeches but are more common in floor speeches.

Figure 3.2.1 demonstrates that senators rarely discuss appropriations on the Senate floor, but regularly credit claim about appropriations in their press releases. Consider the words that distinguish press releases and floor speeches and appear more often in press releases: *announce, fund, include, provide, department, program, million, ensure, secure, federal, grant*. Each of these words are regularly used by senators to announce grants and other appropriations that are allocated to a state. For example, after a grant was issued to a New York state fire department, Chuck Schumer (D-NY) issued a press release with the title, “Schumer *Announces* Village of Endicott Fire *Department* to Receive Over \$109,000 in Federal *Grants*” (emphasis added) (Schumer 2005).

Along with an experienced coder, I manually validated that credit-claiming about appropriations is more common in press releases than floor speeches. I sampled 500 press releases and floor speeches at random from the entire corpora, then asked the coder to read

³I use the method for graphically identifying distinguishing words similar to that developed in Monroe, Colaresi and Quinn (2008).

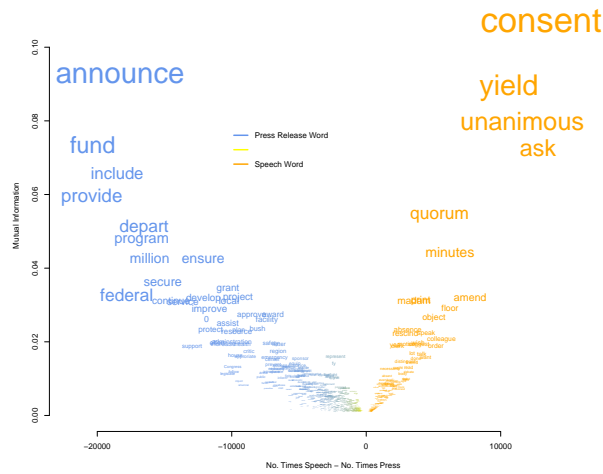


Figure 3.3: Comparing Press Releases to Floor Speeches

This figure demonstrates that senators are much more likely to discuss appropriations in their press releases than in their floor speeches. To demonstrate this point, I use a nonparametric method to identify words that distinguish press releases from floor speeches. Words to the left of the plot are distinctive because they are more prevalent in press releases and words to the right are distinctive because of their prevalence in floor speeches. Floor speeches are distinguished by procedural words (like *consent* and *yield*), while press releases are distinguished by words associated with appropriations (like *announce* and *fund*).

the texts and classify the documents according to a coding scheme, that includes a category to classify documents where legislators claim credit for federal funds.

The results validated the findings from Figure 3.2.1. In the sample of 500 press releases, senators claimed credit for federal funds in 182 (36.4% of press releases), while senators only claimed credit for funds in 20 floor speeches (4% of floor speeches). Credit claiming about appropriations is also rare in House floor speeches: in a sample of 1,000 statements from the House, only 1 speech discussed appropriations for a legislator’s district (0.1 %).

Floor speeches are distinguished by words used in procedural discussions on the Senate floor. Words that distinguish floor speeches are: *consent*, *yield*, *unanimous*, *ask*, *quorum*, *minutes*, *amend*, *floor*, *object*. The coder’s manual check validated this finding, with 0 procedural statements in 500 press releases (0%) and over 220 procedural speeches in the

collection of floor speeches (constituting 44% of the total speeches).

Using a nonparametric statistical technique for identifying distinctive words and a rigorous manual validation method, we see that press releases are distinct political texts, with senators regularly credit claiming about appropriations in press releases, but rarely discussing grants and appropriations in their floor statements. Floor speeches are important mediums for Congressional communication, but focusing on speeches alone would result in ignoring credit claiming about appropriations almost entirely.

3.2.2 Press Releases are Important: “Ventriloquism” and “Uptake”

Press releases are also important because their content is likely to reach constituents through newspapers. Newspapers—particularly local weekly papers—often have only a small budget dedicated towards covering what representatives do while in Congress (Vinson 2002). To fill this gap, newspaper editors rely upon wire service stories and press releases from Congressional offices (Cook 1989; Arnold 2004; Schaffner 2006). In this section, I demonstrate how press releases are likely to reach constituents through local papers.

“Ventriloquism” and Press Releases

Press secretaries know they will have high levels of success in generating news coverage with press releases (Cook 1989; Schaffner 2006). In fact, some press releases are run *almost verbatim* in papers: Table 3.1 collects three press releases (left-hand column) that were subsequently repeated in newspapers (right-hand column) (the newspapers are repeating the senator’s words, much like a ventriloquist’s dummy). The red-text in Table 3.1 identifies the duplicated content. Printing of press releases with little modification appears to be common in small-town newspapers. For example, Richard Lugar (R-IN) issued a press release on

July 17, 2007 describing why Reynolds, IN was selected to receive federal funding for alternative fuels research. His explanation was repeated, *almost exactly*, on July 18, 2007 in The Times—a local newspaper in heavily Democratic northwest Indiana. The repetition of press releases also occurs in major metropolitan newspapers. On May 30, 2008, Senator Dick Durbin’s (D-IL) office issued a press release about funding secured for hybrid buses in Chicago. The Chicago Tribune, which has the 5th largest circulation among American newspapers, used Durbin’s release with only slight modification on May 31, 2008 (second row of Table 3.1). The third example shows that a joint press release from Susan Collins (R-ME) and Olympia Snowe (R-ME) announcing funds secured for laid off factory workers was reprinted—essentially unchanged—in the Bangor Daily News.

Measuring the “Coverage” Rate of Senate Press Releases in Newspapers

Press releases can influence how a newspaper covers a member of Congress without being repeated exactly, by providing a source for statements on a representative’s position or drawing attention towards funds secured for a district. To more systematically analyze how often press releases translate into *coverage* in local newspapers, I measured the percentage of press releases from 10 Senate offices (identified in column 2, Table 2) that were quoted, paraphrased, or repeated in 6 local newspapers (identified in column 1). The total number of press releases from a senate office that were covered in a given newspaper is contained in column 3, while column 4 identifies the percentage of a senator’s total press releases that a newspaper covered.

To determine if a press release from a Senate office was used in a newspaper, I first collected all newspaper stories from 2007 and January 2008 that contained the relevant sen-

Table 3.1: “Ventriloquism” of Press Releases in Local Newspapers

Richard Lugar (R-IN), 7/17/2007	The Times (IN), 7/18/07
The Town of Reynolds was selected in 2005 to demonstrate to the nation and the world that a community’s energy needs can be fully met through locally produced renewable sources, including electricity, natural gas replacement, and vehicular fuel (Lugar 2007).	Reynolds, located about 20 miles north of Lafayette, was chosen in 2005 to demonstrate that a community’s energy needs can be fully met through locally produced renewable sources, including electricity, natural gas replacement and vehicular fuel (AP 2007).
Dick Durbin (D-IL), 5/30/2008	Chicago Tribune (IL) , 5/31/2008
U.S. Senator Dick Durbin (D-IL) announced today that the U.S. Department of Transportation (DOT) has awarded a \$9.6 million grant to the city of Chicago which will allow the Chicago Transit Authority to purchase approximately 13 additional articulated diesel hybrid buses. Hybrid buses are quieter, cleaner, burn less gas and run more smoothly than conventional diesel. (Durbin 2008).	U.S. Senator Dick Durbin says the city of Chicago will receive \$9.6 million from the federal government to buy hybrid buses. Durbin said Friday that the grant from the U.S. Department of Transportation will allow the Chicago Transportation Authority to buy about 13 more articulated diesel hybrid buses. In March, the CTA announced plans to lease 150 hybrid buses at the cost of \$13.4 million a year. Hybrid buses burn less gas than conventional diesel buses (AP 2008).
Susan Collins (R-ME), 11/1/2007	Bangor Daily News, 11/2/2007
US Senators Olympia J. Snowe and Susan Collins today announced that the US Department of Labor has approved their request for \$894,918 in National Emergency Grant funding for Domtar and Fraser Mill workers. Last month Senators Snowe and Collins sent Secretary Chao a letter urging the Department of Labor to quickly review and approve the NEG funding request for the 300 workers who lost their jobs at Domtar Industries in Baileyville and Fraser Papers of Madawaska. “This is great news for 300 workers in Northern and Eastern Maine who lost their jobs through no fault of their own” said Senators Snowe and Collins.	U.S. Sens. Olympia J. Snowe and Susan Collins Thursday announced that the U.S. Department of Labor has approved their request for \$894,918 in National Emergency Grant funding for Domtar and Fraser Mill workers. Last month, the senators sent Secretary Elaine Chao a letter urging the Department of Labor to quickly review and approve the NEG funding request for the 300 workers who lost their jobs at Domtar Industries in Baileyville and Fraser Papers of Madawaska. “This is great news for 300 workers in Northern and Eastern Maine who lost their jobs through no fault of their own,” said the senators .

ator’s name.⁴ I then used publicly available *cheating detection* software to uncover press

⁴I limited attention to press releases from 2007. Stories were collected from the Lexis-Nexis database of newspaper stories. The newspapers selected are not a random sample of papers. I intentionally selected newspapers that I conjectured would display a great deal of variation in their use of press releases. The Deseret Morning News (Salt Lake City, Utah), The Bismarck Tribune (Bismarck, North Dakota), and the Bangor Daily News (Bangor, Maine) are all local newspapers that were likely to be highly reliant on the information senators provided. The Salt Lake Tribune (Salt Lake City, Utah), The Pioneer Press (St. Paul, Minnesota) and the San Francisco Chronicle (San Francisco, California) are all large newspapers, with greater capacity for covering political news. I also selected a mix of Republican, Democrat, and split delegations, senators from big and small states, and senators who issued a great deal of press releases and senators who

releases and newspaper stories that had extremely similar content (Bloomfield 2008). The software provides an efficient method for searching over the 1,069,430 potential newspaper-press release pairs that must be checked to generate Table 3.2. I then took the pairs of newspaper stories and press releases that the software identified with similar content and manually validated that the newspaper article contained a quote from the press release.

Overall, Table 3.2 indicates that press releases are regularly used by local newspapers. For example, both Orrin Hatch (R-UT) and Bob Bennett (R-UT) had over a quarter of their press releases covered in the *Deseret Morning News*. This should not be surprising: the *Deseret Morning News* has a history of financial problems that constrain its ability to cover politics, and the editor-in-chief, Joseph Cannon, is the former chair of the Utah Republican party. Other newspapers use press releases at a similar rate: Byron Dorgan (D-ND) had 54 of his press releases used in the *Bismarck Tribune* and 74 press releases from Susan Collins (R-ME) were used in the *Bangor Daily News*. Even the *San Francisco Chronicle* used press releases from both Diane Feinstein (D-CA) and Barbara Boxer (D-CA). The high percentage of press releases used from each Senate office is particularly striking given that Senate offices write press releases for an entire state. Therefore, a sizable portion of press releases from a Senate office are irrelevant to a local paper. This analysis, while limited to a subset of senators and newspapers, shows that press releases are a common source of information for newspapers. Press releases are regularly quoted in local newspapers—such as the *Bismarck Tribune*—and are used in major metropolitan papers—like the *San Francisco Chronicle*. This confirms that press releases are an important medium that legislators use to communicate with constituents, as the messages in press releases are likely to reach constituents.

issue only a few. Given the nature of the sample selection, inference to a broader population is inappropriate from these data, but is the subject of future research.

Table 3.2: Measuring the Coverage Rate in Senate Press Releases

Newspaper	Senator	Number Quoted	% of Press Releases
Deseret Morning	Bennett (R-UT)	35	32.4
Deseret Morning	Hatch (R-UT)	67	27.2
Salt Lake Trib.	Bennett (R-UT)	21	19.4
Bangor Daily	Collins (R - ME)	74	18.2
Salt Lake Trib.	Hatch (R-UT)	43	17.4
Bismarck Trib.	Dorgan (D- ND)	54	16.8
Bismarck Trib.	Conrad (D-ND)	33	16.3
Pioneer Press	Klobuchar (D-MN)	29	13.1
Pioneer Press	Coleman (R- MN)	32	12.2
Bangor Daily	Snowe (R- ME)	44	11.9
San Fran. Chron.	Boxer (D-CA)	11	7.2
San. Fran. Chron.	Feinstein (D- CA)	24	6.3

This table presents the coverage rate of press releases issued in 2007 in local newspapers and shows that constituents are likely to read the contents of their representative’s press releases in local newspapers. The first column contains the name of the newspaper and the second column identifies which senator’s press releases were used. The third column presents the number of press releases that had content appear in a story in the local newspaper. To compute this number, I used freely available cheating detection software to uncover sentences that were the same or highly similar (Bloomfield 2008). The fourth column presents the percentage of press releases from a Senate office that were covered in the newspaper.

3.3 Conclusion

In this chapter I introduced the collection of press releases that I use to measure legislators’ home styles. Press releases are a nearly ideal source for measuring home style: they are regularly used by each Senate office and are issued on nearly every day. Further, press releases are distinct from floor speeches with senators much more likely to discuss appropriations in their press releases than in their floor speeches. Using an innovative new measurement of *uptake*, I show that newspapers regularly use senators’ press releases for their stories (sometimes running the press releases verbatim).

In the next chapter, I introduce the statistical model that I use to efficiently measure legislators' home styles in the collection of press releases, allowing for systematic tests of home style's importance for political representation.

Chapter 4

A Statistical Model for Measuring Home Styles

Abstract: To systematically measure senators' home styles in the thousands of press releases issued during each legislative session, I introduce a new statistical model to measure authors' expressed priorities, a critical component of legislative home style. The model I introduce provides an efficient method for analyzing large quantities of political texts, while also avoiding some of the well-known limitations of human coders. The result is systematic, comprehensive, and verifiable measures of legislators' home styles. Through a series of examples, tests, and case studies, I demonstrate that the estimated priorities are valid and capture politically meaningful behavior. Using a method of cluster evaluation introduced in Grimmer and King (2009), I demonstrate that the model I introduce outperforms human coders and state-of-the-art nonparametric topic models for political texts, a consequence of the additional information I include in the model. I then demonstrate that the variation in expressed priorities follows dynamic and across-senator variation that should be expected from previous qualitative work on home style. In Appendix A I describe the technical details of the model, including how I use a variational approximation to perform fully Bayesian inference that would otherwise be infeasible. Appendix A also describes the data based and rigorous approach to model selection.

In this chapter, I introduce the statistical model that I use for the measurement of legislative home style and demonstrate its usefulness for systematic and comprehensive tests of home style's role in political representation. The statistical model is an *unsupervised* learning model: it requires no pre-read documents or human created categories, instead the model simultaneously invents a set of categories and measures the attention legislators allocate to each of the categories. Using the collection of press releases introduced in Chapter 3, I demonstrate that the model provides systematic, comprehensive, and verifiable measures of legislators' expressed priorities, a critical element of legislative home style. A series of validations demonstrate the statistical model and press releases capture politically relevant expressed priorities and topics of discussion. I also demonstrate that the statistical model is able to outperform expert human coders and state of the art nonparametric statistical models for document classification.

4.1 The Problem: Measuring Home Style in Large Collections of Text

Political scientists regularly analyze large collections of texts, but standard methods for coding texts are extremely costly because they rely upon human labor. Manual coding schemes require substantial time and money to analyze even moderate collections of texts. Human based coding schemes are also limited by our (humans) working memories, which implies that manual based coding schemes are unlikely to be optimal—no matter how carefully devised (Grimmer and King 2009).

The primary obstacle to coding the press releases using standard methods are the high costs of classifying documents by hand. Reading every press release in the collection is a

monumental task: at a rate of one press release every five minutes (with no breaks) it would take over 13 forty-hour weeks to read all the press releases. This represents a lower bound on the amount of time necessary to code the documents: my experience is that the most diligent research assistants read at a much slower rate, and that several coders are necessary to measure intercoder reliability and to identify ambiguities in the coding scheme. If any changes are made to the original categories, then coding must begin anew with the coders rereading all the documents.

Manual coding also requires researchers to develop a classification scheme before hand, a task which humans are particularly ill-suited to perform. Creating a coding scheme for press releases is even more challenging because so few studies have systematically analyzed what legislators say in their press releases. I demonstrate in this chapter and throughout the rest of the book that adopting the categories assumed when scholars analyze other large collections of text, like the policy agendas project (Jones, Wilkerson and Baumgartner 2009), would result in overlooking particularly important topics of discussion. The estimated categories produced by the statistical model are unexpected *ex-ante*, but are reasonable and intuitive *ex-post* (Grimmer and King 2009).

Even classifying the press releases into already established categories is a major challenge for human coders. If the coding scheme includes more than a few categories, than humans' very limited working memories will result in coders *satisficing* when classifying documents (Krosnick 1999). Further manual coding schemes face a difficult problem: to avoid ambiguity, we could create longer and more intricate coding rules. But, the more complicated coding rules are unlikely to be remembered by well trained coders, resulting in substantial intercoder reliability problems (Grimmer and King 2009).

Given these limitations, using manual methods is infeasible. And the difficulties in con-

structuring a coding scheme precludes the use of supervised learning methods as infeasible. To avoid these problems, I now describe the statistical model used to measure legislators' home styles.

4.2 A Statistical Model to Measure Expressed Priorities

The statistical model that I develop simultaneously estimates the topics in the press releases, measures the attention each senator allocates to the priorities, and classifies press releases into an appropriate topic. The model also estimates a typology of home styles, grouping senators together with similar expressed priorities which I describe in Chapter 5. I build the model around a natural hierarchy in texts: statements, at the bottom of the hierarchy, are naturally grouped according to their author, at the top of the hierarchy. The inclusion of the additional author information simultaneously allows the estimation of our quantity of interest, senators' expressed priorities, and improves the quality of the classifications. The model is estimated using a variational approximation, a deterministic alternative to MCMC that allows for fully Bayesian inference when standard sampling based methods fail. Appendix A provides technical details of the model and the variational approximation.

4.2.1 Intuition

To understand why we can use statistical models to analyze text, we first define a *topic* as a set of documents that convey a similar *concept* (allowing the particular concept or concepts that are used to depend upon the application).¹ For example, we might group together one

¹This definition is intentionally vague, because we may want a topic to mean different things in different contexts. The ambiguity is intentional and a consequence of the *ugly duckling theorem* which proves that classification is impossible without making assumptions (Watanabe 1969). Therefore, we are unable to distinguish a group of documents having the same topic without establishing a more detailed definition of topic.

set of documents as discussing the Iraq war, while a second of documents focus upon issues related to farming. To express thoughts and opinions about the Iraq war, we rely upon a common vocabulary of words and phrases. We express opinions about our troops, our presence in Baghdad, and whether to "stay the course". Crucially, these words and phrases are regularly repeated within a document and shared across speakers. Other concepts, like farming, are expressed using a different vocabulary: legislators may take credit for ethanol subsidies or discuss agriculture in their state. Therefore, to identify groups of documents with similar concepts, we will focus on identifying a distinctive set of words that characterizes each topic.

The statistical model I introduce expands upon the well established idea that concepts in texts are expressed with a distinctive set of words, including additional information about the author of each document. This allows the estimation of senators' expressed priorities and also improves the classifications over models that exclude additional information about the documents.²

We now offer a more detailed introduction to the statistical model. Technical details of the model are located in Appendix A.

²Information about the senator who authored the press release aids classification by formulating a more accurate first guess, or prior, about a document's topic. To see why, consider two possible classification problems. Suppose first that we randomly select a press release and need to formulate our best guess of its topic before reading the press release. Given our current information, our best guess will be the proportion of press releases in each topic, *across all press releases*. But now, suppose that we randomly select a document from one author's collection of press releases. Given this additional information, our new best guess about the probability of each topic will be the proportion of press releases in each topic, for that *particular senator*. By only focusing on the priorities for one particular senator, our guess about the document's topic will almost always improve.

4.2.2 Text as Data

To measure senators expressed priorities in press releases statistically, the first step is to represent the press releases as quantitative data. From the discussion in the previous section, we know there are words that occur regularly across all concepts and other words that are only used when legislators are articulating one particular concept. Therefore, in this initial stage, we make a set of assumptions that focuses attention on words that are most likely to discriminate between politically relevant topics. (The steps that I employ here are well established in a large literature in the quantitative analysis of texts and their utility has been verified in a number of experiments (Manning et al. 2008).)

The first and most critical assumption is that *word order* does not convey additional information about a document's topic. While surprising at first, a number of empirical studies have verified that word order conveys little additional information about a document's topic beyond counting the number of times words occur in the document (Manning et al. 2008). We will also discard punctuation and place all words in lower case.

The way a word is used in sentences or documents often varies, but still refer to the same basic concept. For example, we might describe our "family", a gathering of "families", or a "family's" heirlooms. Even though *family*, *families*, *family's* are all different words, each refers to the same basic concept: a set of related individuals. To group together words that refer to the same basic concept, I apply a *porter-stemmer* algorithm to the collection of texts (Porter 1980). The porter-stemmer is a many-to-one map that returns the core element of a word or its *stem*. For example, *family*, *families*, *family's* are all mapped to the stem *famili*.

The final processing step removes stems that are unhelpful when distinguishing topics. I discard *stop words* or words that are merely place holders in the English language, words

like (the, it, and, for). Rarely used are unlikely to describe major topics, so I discard all words that do not occur in at least 0.5% of the press releases. I also discard any word that occurs in 90% of any senator's press releases, because these words are likely to group together topics that group together a senator's individual press releases, rather than creating topics that reflect politically relevant topics.

The result of the preprocessing steps is that each press release is now a $2,796 \times 1$ count-vector, where each element counts the number of times a particular stem occurs in a press release.

4.2.3 Data Generation Process

Supposes that each senator i during each legislative session in which she is in Congress t , ($t = 2005, 2006, 2007$) can allocate attention to K ($k = 1, \dots, K$) issues in her press releases.³ I focus on the attention allocated to issues during each legislative session because the policies considered in the Senate can change dramatically from year-to-year, allowing senators to change their focus substantially as well. Represent the attention senator i allocates to issue k during legislative session t as π_{itk} . π_{itk} is the expected proportion of press releases from senator i that is about the k^{th} issue. Collect the attention a senator allocates to all K issues during a session into the vector $\boldsymbol{\pi}_{it} = (\pi_{it1}, \dots, \pi_{itK})$.

The attention a senator allocates to the issues probabilistically determines the topic of each press release. Suppose that each press release j ($j = 1, \dots, D_{it}$) from senator i in the t^{th} session has only one topic, which I represent with τ_{itj} : if $\tau_{itjk} = 1$ then the press release

³In the analysis presented here, the number of issues is 44. In Chapter A I describe the extensive testing that was used to determine the appropriate number of topics.

is about the k^{th} topic and the other $K - 1$ elements of τ_{itj} are equal to zero.⁴ I will suppose that τ_{itj} is a draw from a multinomial distribution,

$$\tau_{ijt} | \pi_{it} \sim \text{Multinomial}(1, \pi_{it}).$$

Given the topic of each press release, I draw its content. As a result of the preprocessing steps, I represent the j^{th} press release from senator i in the t^{th} legislative session as a $2,796 \times 1$ count-vector y_{ijt} , where typical element, y_{ijtz} , counts the number of times the z^{th} word appears in press release y_{ijt} . Represent the number of words in press release y_{ijt} with n_{ijt} . If $\tau_{ijtk} = 1$ then y_{ijt} is a draw from a multinomial distribution, with the relative frequency of words determined by parameters specific to each topic,

$$y_{ijt} | \tau_{ijtk} = 1, \theta_k \sim \text{Multinomial}(n_{ijt}, \theta_k)$$

where θ_k is a $2,796 \times 1$ vector that describes the relative rate at which words occur for the k^{th} topic.

Prior on Senators' Expressed Priorities Implicit in the model is an assumption that senators are exchangeable, but of course there is more information about each senator which can be used to efficiently borrow information across senators in the prior. Grimmer (2010a) outlines a regression based prior that allows for the inclusion of senator-level of covariates (such as a senator's party, committee assignments, or an indicator for a particular senator across different years). But if these covariates do not predict well differences in expressed priorities, they are not particularly helpful when deciding how to borrow information across

⁴While a common assumption throughout the statistical analysis of text, this assumption is particularly appropriate for press releases. In several interviews, press secretaries emphasized that they use press releases to convey one specific message to constituents.

senators. In place of covariates, I use a *mixture* of Dirichlet distributions prior to identify senators who articulate similar priorities and then pool information among those senators. (The use of a mixture prior also makes the exchangeability assumption more realistic (Gelman et al. 2004)). Rather than rely upon our ability to identify covariates that predict senators expressed priorities, this prior works on the expressed priorities directly to decide which senators to group together.⁵

Suppose that each senator adopts one of S ($s = 1, \dots, S$) *styles* and denote senator i 's style in year t with σ_{it} . Assume that $\sigma_{it} \sim \text{Multinomial}(1, \boldsymbol{\beta})$ where $\boldsymbol{\beta}$ describes our prior guess about a particular senator's style and is $\boldsymbol{\beta} \sim \text{Dirichlet}(\mathbf{1})$, where $\mathbf{1}$ is a vector of ones. Conditional on a senator's style, her expressed priorities are a draw from a Dirichlet distribution specific to the group of senators who share the same style,

$$\boldsymbol{\pi}_{it} | \sigma_{its} = 1, \boldsymbol{\alpha}_s \sim \text{Dirichlet}(\boldsymbol{\alpha}_s)$$

where $\boldsymbol{\alpha}_s$ represents the parameters for the Dirichlet distribution for senators who share the s^{th} style.

In addition to the methodological advantages, this prior adds substantively interesting content to the model. This prior creates a *typology* of senators' expressed priorities. I demonstrate in Chapter 5 that this typology illuminates the basic choices representatives make when they decide how to define the representation they offer to their constituents. To complete the specification, I assume that all the Dirichlet shape parameters are draws from a Gamma distribution, with the prior set to *limit* the pooling across senators.⁶

⁵By way of analogy, this prior is comparable to a hidden Markov model without the over-time structure (Schrodtt 2000).

⁶The Gamma distribution has sampling density, $g(\alpha_k | \lambda, \delta) = \alpha_k^{\delta-1} \frac{\exp(-\frac{\alpha_k}{\lambda})}{\lambda^\delta \Gamma(\delta)}$. I set $\lambda = 0.25$ and $\delta = 1$, which ensures that the value of each α_k remains relatively small, limiting the pooling. In Appendix A.2 I describe

4.2.4 Posterior Summary and Approximation

In this section, I describe the approach to posterior approximation that allows for fully Bayesian inference, even though applying standard sampling based methods is infeasible. The details of this section are technical and therefore can be skipped without losing any of the substantive argument.

Figure 4.1 provides a graphical summary of the posterior distribution for one senator's priorities and press releases. Direct manipulation of the posterior distribution is infeasible so, like the vast majority of applications of Bayesian inference, I use approximation methods to characterize the posterior distribution (Gill 2004). To perform this approximation, I use a recently developed deterministic alternative to Markov Chain Monte Carlo (MCMC), appropriate when MCMC is otherwise infeasible: variational approximations (Jordan et al. 1999; Bishop 2006). The variational approximation is particularly useful here because the complex model and posterior make the convergence of a Gibbs sampler too slow to be useful. Further, mixture models (like the model posited here) can cause a Gibbs sampler to draw from the wrong posterior. This latter problem is known as the *relabeling* problem (or aliasing) and it is a well-known obstacle to applying Gibbs sampling to mixture model posteriors (McLachlan and Peel 2000). One proposed solution is to constrain the parameter space, but this hinders the convergence of the Markov chain (McLachlan and Peel 2000). As an alternative, current best practice recommends running the chains without constraints and then post-processing, identifying the same clusters using a clustering algorithm on the output. This is a useful approach with a small number of mixture components, but MCMC methods have difficulty exploring the posterior as the number of mixture components increases.

how I used the *Bayesian Information Criterion* (BIC) to determine the number of styles $S = 5$ (Kass and Raftery 1995).

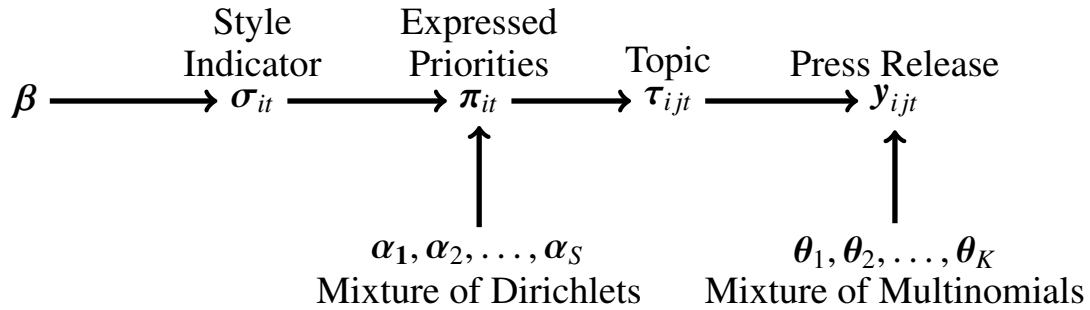


Figure 4.1: Diagram for Statistical Model

Alternatively, an **Expectation Maximization (EM)** algorithm could be used to obtain *maximum a posteriori* (MAP) estimates (McLachlan and Krishnan 1997). This is a reasonable method for inference when MCMC is infeasible, but generating uncertainty estimates from the results of an EM algorithm can be computationally challenging in large mixture models, due to the large number of parameters (McLachlan and Peel 2000). As a result, estimates from an EM algorithm are often analyzed under the assumption that there is no uncertainty in the estimates (McLachlan and Peel 2000; Banerjee et al. 2005; Quinn et al. 2010).⁷ This is unattractive because of the different amounts of information about each senator’s expressed priorities, as well as the other parameters in the model and our inferences should reflect these differences in information.

To avoid the difficulties associated with sampling methods and to estimate the entire posterior distribution on each senator’s expressed agenda, I use a *variational approximation* to derive an analytical—rather than computational—approximation to the posterior distribution (Jordan et al. 1999). Like EM algorithms, variational methods avoid the identification

⁷The usual method for analyzing uncertainty after using an EM algorithm is to use a *Laplacian* approximation, which supposes that the posterior is a multivariate normal distribution around its mode (Grimmer 2009). This approximation only performs well asymptotically and McLachlan and Peel (2000) show that the asymptotics for this approximation are particularly slow for mixture models. The problem is exacerbated with the hierarchical model here, making the multivariate normal approximation particularly unattractive. Even if I could justify the Laplace approximation, it is generally infeasible to invert a $(136,000 \times 136,000)$ Hessian, which is necessary to use the Laplacian approximation.

problem because optimization occurs according to a deterministic algorithm, based upon starting values and the posterior distribution. Rather than generating MAP parameter estimates, variational methods analytically estimate the entire posterior distribution on each senator's expressed agenda. To perform this estimation, first restrict the model to a simpler, but *very general*, family of distributions. Then, I use the *calculus of variations* to select the member of this distributional family that is closest to the true posterior distribution, where proximity between the distributions is measured using the *Kullback-Leibler* (KL) *divergence* (Bishop 2006), a measure of proximity between two distributions. In Appendix A, I derive the update equations used to estimate the posterior distributions.⁸

4.3 Identifying the Topics of Discussion

An advantage of the statistical model I introduce is that the analyst does not need to develop a categorization scheme before hand, rather the topics are estimated from the texts. But, to interpret each author's expressed priorities, I need to reliably label and validate each topic. To label the topics and perform this verification, I use three different approaches: reading a subset of randomly chosen documents to provide a label, automatically generating distinctive stems to label clusters using the *mutual information* between stems and a topic, and exploiting over time variation in salience to check the reasonableness of cluster labels.

⁸Variational approximations are a method of posterior approximation that is gaining popularity in the machine learning and computer science literature (Jordan et al. 1999; Bishop 2006). The use of variational approximations is not without its tradeoffs—while guaranteed to correctly estimate the expected value of the posterior (Wang and Titterington 2004), variational approximations will understate the variability in the true posterior (MacKay 2003). Simulations suggest that this problem is only slight for the mixture model estimated here and given the large and complex nature of the posterior (and the need to estimate parameters that would be integrated out if I used collapsed Gibbs sampling (Liu 1994)) the only feasible alternative I am aware of for fully Bayesian estimation is the variational approximation. For an introduction to variational approximations for a political science audience, see Grimmer (2009).

4.3.1 Manual Cluster Labels

As a first step to assess the validity of the topics and to generate labels for topics, I randomly sampled ten press releases from each topic (Quinn et al. 2010) and then read each of the ten documents to generate the label found in the first column of Table 4.1.

On the whole, the clusters seemed to group together documents that referred to the same topic. For example, one group of texts discussed judicial nominations. Press releases in this category include releases from senate delegations to “Announce Recommendations for Eastern District Federal Judgeships” (Webb 2007), from members of the Judiciary committee who publicize that the “Senate Approves Kyl-Feinstein Provision Adding Judgeship to Ninth Circuit” (Kyl 2007), or declare that, “The United States Senate unanimously confirmed Norman Randy Smith today to serve on the Ninth Circuit Court of Appeals” (Craig 2007). Another randomly chosen set of press releases dealt with ethanol based fuel and its place in energy policy. Among the press releases selected from this category is an announcement from a group of senators who “introduced legislation that will increase American drivers’ access to ethanol at fuel pumps” (Harkin 2007), or Saxby Chambliss (R-GA) stating that he “addressed members of the Governor’s Ethanol Coalition” (Chambliss 2007), a summary of an investigation into oil companies’ attempt to “prohibit or strongly discourage the sale of alternative fuels” (Grassley 2007), and legislation introduced to “dramatically expand renewable fuel sources” (Bingaman 2007). These press releases all deal with energy—and in particular biofuel as an alternative fuel source.

4.3.2 Automatic Cluster Labels Using Mutual information

In the previous chapter I use the mutual information between words and type of document to identify stems that distinguish press releases from Senate floor speeches. Mutual in-

formation is used similarly here, to identify stems that distinguish documents assigned to different topics. This requires a simple generalization of the idea introduced in Chapter 3. In the second column of Table 4.1 I placed the stems that best predicted membership in a particular topic (or the stems with the highest mutual information with a particular topic).

The predictive stems for each topic show that the model identifies conceptually coherent topics that are also politically relevant. For example, stems that distinguish press releases about fire department grants include *firefight*, *homeland*, *afgp award*, *equip*, *depart*. The predictive stems identify the acronym *afgp* which stands for the “Assistance to Firefighters Grant Program” a large competitive grant program administered by the Department of Homeland Security (see Chapter 8). Stems that identify press releases classified as agriculture are *farmer*, *farm*, *agricultur*, *crop*, *rancher*: all words related to farming policy.

In addition to the mutual information stems and manually generated topic labels, a heuristic look at Table 4.1 suggests the model was able to identify substantively interesting issues in press releases from senators. The model identified press releases discussing the veteran’s affairs and the subsequent Wounded Warrior legislation, the Iraq war, illegal immigration, foreign affairs, and the mortgage crisis. These topics are all substantively important and have analogies in manually generated coding schemes (eg Schiller 2000, Lee 2008, Jones, Wilkerson and Baumgartner 2009). But the model also identifies categories that are politically important—such as the category for press releases honoring constituents and historic events—which are commonly left out of studies of Congressional communication. In the previous chapter I demonstrated that press releases are much more likely to contain credit claiming about appropriations than floor speeches, which manifests in the topics identified by the model. The model applied to the press release data identifies sev-

eral topics about appropriations, grants, and other particularistic goods, a category absent from the Quinn et al. (2010) clustering of just floor speeches, expected from our analyses in the previous section.

Table 4.1: Topics in Press Releases

Description	Stems	%
Honorary	honor,prayer,rememb,fund,tribut	5.0
Transp. Grants	airport,transport,announc,urban,hud	4.8
Iraq	iraq,iraqi,troop,war,sectarian	4.7
DHS Policy	homeland,port,terrorist,dh,fema	4.1
History/Heritage	heritag,park,histor,cultur,visitor	3.8
Judicial Nom.	judg,court,suprem,nomin,nomine	3.8
Fire Dept. Grant	firefight,homeland,afgp,award,equip	3.7
WRDA	water,river,corp,wrda,habitat	3.7
Education Fund.	student,educ,school,teacher,colleg	3.6
Budget	tax,deficit,budget,cut,wage	3.5
Consum. Safety	consum,fda,internet,food,broadcast	3.2
Health Care Access	care,patient,health,medic,hospit	3.0
Science Research	univers,research,scienc,center,laboratori	2.9
Justice Grants	crime,justic,enforc,methamphetamin,meth	2.8
Environment	epa,environment,pollut,fish,clean	2.8
Biofuel	fuel,energi,ethanol,renew,oil	2.8
Illegal Immgr.	immigr,border,illeg,reform,alien	2.6
Farm	farmer,farm,agricultur,crop,rancher	2.6
Defense Const.	defens,militari,navi,armi,aircraft	2.5
Energy/Gas	oil,price,energi,gasolin,consum	2.4
Justice Dept.	intellig,detaine,cia,surveil,gonzal	2.4
Def. Approp.	militari,soldier,guard,iraq,troop	2.2
Worker's Rights	worker,airlin,employe,flight,faa	2.0
Mortgage Crisis	mortgag,lender,bank,loan,lend	1.9
Veteran's Affairs	veteran,affair,traumat,wound,care	1.9
BRAC	brac,realign,closur,air,defens	1.9
Beef Imports	trade,beef,export,japan,cattl	1.8
Gov. Transp.	transpar,earmark,taxpay,lobbyist,lobbi	1.7
Foreign Affairs	darfur,peac,passport,intern,humanitarian	1.7
Education	student,school,academi,young,attend	1.6
Tax Policy	tax,deduct,relief,taxpay,incom	1.5
Transp. Approp.	transport,congest,rail,road,transit	1.5
Medicare	prescript,liheap,medicar,beneficiari,senior	1.4
Disasters	fema,disast,declar,storm,damag	1.2
Child Safety	crime,crimin,theft,internet,ident	1.1
SCHIP	schip,insur,coverag,uninsur,chip	1.1
Prev. Medicine	diseas,diagnos,cancer,breast,cure	0.9
Stem Cells	stem,cell,cure,research,diseas	0.9
Katrina Recovery	louisiana,hurrican,gulf,coast,coastal	0.9
Infect. Disease	flu,pandem,vaccin,outbreak,stockpil	0.5
FDA	fda,drug,prescript,pharmaceut,medicin	0.5
Social Sec.	social,retir,privat,terrorist,retire	0.5
Justice Oversight	gonzal,alberto,interim,resign,dismis	0.4
Consum/Worker Saftey	miner,accid,safeti,tragedi,coal	0.4

4.3.3 Using Senate Debates and External Events to Validate Topics

Following a validity check outlined in Quinn et al. (2010), I can use the daily number of press releases generated to assess the labels attached to the documents. Consider the debate around the Comprehensive Immigration Reform Act of 2007 (S. 1348). President Bush's proposed immigration reforms were met with fierce resistance in the Senate and failed on two separate occasions. Both cloture votes in the Senate were high profile events, garnering a large amount of media and public attention. If the statistical model captures meaningful communications from senators, I should expect to see a spike in the number of press releases about immigration around the cloture votes.

The top plot in Figure 4.2 shows the number of press releases placed in the immigration category from 2005 to 2007.⁹ There are obvious spikes when the two cloture votes occur in the Senate. The model also sees a spike in the number of press releases about immigration when reform was considered in 2006 and when the Senate considered the Development, Relief and Education for Alien Minors Act (DREAM) act, that would have allowed the children of illegal immigrants to be eligible for college scholarships and enlist in the military. The other two plots in Figure 4.2 further illustrate that the model is accurately capturing the content of press releases. Daily press releases about the Iraq war spike when Abu Musab al-Zarqawi is killed, the Iraq study group report is released, and when President Bush announced the plans for the surge. Honorary press releases—press releases that discuss holidays and honor the recently deceased—also have spikes corresponding to deaths of international figures and commemorating the anniversary of the 9/11 terrorist attacks.

In the rest of the book, I use the output from the model, with other kinds of evidence and

⁹As before, the topic of each press release is set to the topic with the highest posterior probability of having generated the press release.

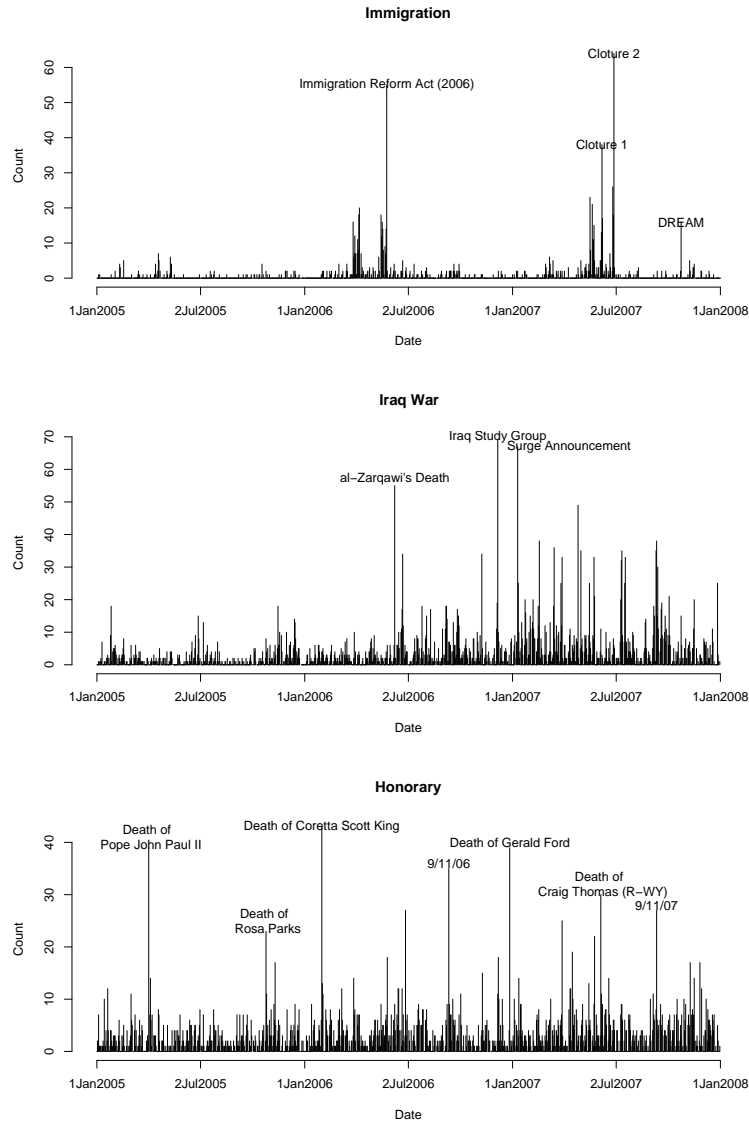


Figure 4.2: Senate Debates and External Events Explain Spikes in the Daily Press Releases from Each Topic

measurements to provide a comprehensive exploration of home style. I now provide formal justifications and evaluations of the model's performance, demonstrating its methodological advantages over state of the art topic models and human coders, along with its ability

to capture theoretically intuitive variation in expressed priorities.

4.4 Additional Structure Leads to Better Document Classification

Existing methods for unsupervised learning and text-clustering are designed to assign documents to topics or to measure the attention in an entire collection of documents—ignoring the information about authors. As a result, these methods are either unable to measure author-specific attention or would require ad-hoc modifications that fail to include the additional information of the model introduced here. In this section, I demonstrate why many off the shelf clustering methods are unable to estimate the priorities senators articulate in public statements and I employ a recently developed approach to evaluating *cluster quality* to show that the additional structure included in the expressed agenda model results in higher quality clusters than those produced by expert hand coders or other statistical topic models that ignore the author structure (Grimmer and King 2009).

4.4.1 The Limits of Ad-Hoc Modifications of Existing Methods

To use existing clustering algorithms to measure senators' expressed priorities, one could apply a clustering algorithm to each senator's press releases separately and equate a senator's attention with the proportion of press releases assigned to each topic.

This method fails, however, because the estimated topics would be different across senators and the set of topics must be fixed across senators to allow for priorities to be comparable. If a senator issues a press release about a topic (say the Iraq war) only occasionally, an unsupervised learning method will lump together press releases about a topic with other

press releases about similar, though distinct, topics (defense spending and veteran affairs, perhaps). The clustering solution for a senator who allocates a great deal of attention to the issue, however, will identify the Iraq war as a distinct topic. As a result, a press release with identical content issued from two different senators could give the impression that the two senators are focusing upon *different* issues.

To demonstrate this problem, consider the press releases of two senators with similar explanatory styles: Robert Menendez (D-NJ) and Frank Lautenberg (D-NJ). I used a mixture of von Mises-Fisher distributions to separately cluster Lautenberg's and Menendez's press releases (Banerjee et al. 2005). To show that two press releases with identical content can be allocated to different topics, I used a *joint-press* release—a press release from two senators with identical text—issued by Lautenberg and Menendez on July 31st, 2007 that touted the senators' efforts to improve reporting standards about toxic waste disposal (Lautenberg 2007; Menendez 2007). The clustering result from Lautenberg's press releases placed the joint press release in a bureaucratic regulation cluster, with identifying stems `push`, `require`, `law`, `bureau`. The clustering solution from Menendez assigned the *same document* to a cluster about economic growth (with stems `economi`, `future`, `econom`, `studi`, `growth`), because Menendez dedicates considerably less attention to bureaucratic regulation than Lautenberg. This shows that *the same press release can create the appearance that two senators are focusing on different issues* if applied to each senator's press releases separately. The model introduced here avoids this problem by fixing the topics across senators.¹⁰

¹⁰This problem is well-known in hierarchical unsupervised learning (often called “atom-sharing”) and motivates the creation of hierarchical Dirichlet process priors (Teh et al. 2006).

4.4.2 Evaluating Cluster Quality

In this section I employ a measure of *cluster quality* developed in Grimmer and King (2009) to compare the categorization of press releases produced by the model introduced here to the categorization produced by the Senate staffers who wrote the press releases and clusters generated using a popular statistical topic model that does not include the additional author topic structure. For all three comparisons, the expressed agenda model is shown to produce significantly higher quality classifications.

The measure of cluster quality involves sampling pairs of documents assigned to the same and different clusters. Research assistants were then asked to evaluate the pairs of documents on a three-point scale, based upon whether the content of a pair of press releases are (1) unrelated, (2) loosely related, or (3) closely related. I then averaged over the human evaluations to create the measure of cluster quality: the average evaluation of press releases assigned to the same cluster minus the average evaluation of press releases assigned to different clusters.

Because the comparisons in this section are made between pairs of clustering solutions, I need only sample those pairs of documents where the partition created by the expressed agenda model and the comparison model differ (see Grimmer and King (2009) for proof). Therefore, for each experiment I sampled 50 pairs of documents that the expressed agenda model assigned to the same cluster, but assigned to a different cluster by the comparison method and 50 pairs of documents assigned to different clusters by the expressed agenda model, but the same cluster by the comparison method. Using these pairs of documents, I was able to construct a measure of the differences of cluster quality where the two methods could differ.

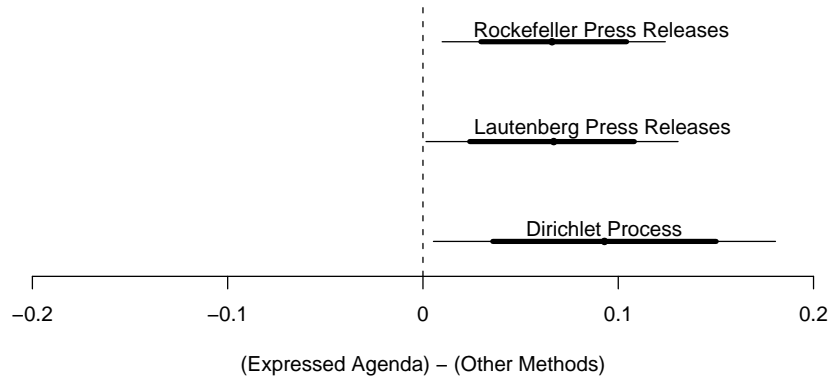


Figure 4.3: Comparing the Statistical Model to Humans and Other Statistical Models

This figure shows how that the model I introduce provides higher quality clusters than press secretaries generate on senators' websites and state of the art nonparametric topic models.

Press Release Categories from Senate Offices The first experiment compares the categories of press releases from Jay Rockefeller's (D-WV) web site to the categorization of Rockefeller's press releases from the statistical model I introduce (which was obtained from the estimation of the model analyzed throughout this paper, applied to the entire collection of press releases). This represents a particularly difficult test for the model, as Senate staffers invest substantial time when categorizing documents and the categorization is likely done by the *author of the press releases*: Rockefeller's press secretary.

Even though this is a difficult test for the expressed agenda model, the top line of Figure 4.3 demonstrates that my model produces higher quality clusters than the press secretary clusters. The point estimate for the difference appears as a dot, the thick lines are 80 percent confidence intervals and the thin lines are 95 percent confidence intervals for the difference. This quantity is to the right of the vertical dashed line, indicating that the expressed agenda model has significantly better clusters than those produced by Rockefeller's office.

The second line of Figure 4.3 carries out a similar comparison using a categorization of Frank Lautenberg’s (D-NJ) press releases from his Senate website. Once again, the categorization of the press releases from my model is able to provide a partition of the documents that is evaluated substantially higher than the Senate staffers’ categorization. Therefore, the inclusion of additional structure ensures that the expressed agenda model is able to create a categorization that dominates expert human coding.

A Nonparametric Topic Model for Texts To demonstrate that the structure included in my model provides information that leads to higher quality clusters of press releases, I compared the clusters obtained using my model to those obtained using a particular statistical model for document classification that does not include this structure: a nonparametric topic model based upon the Dirichlet process prior, with a multinomial base distribution, estimated using a variational approximation (Blei and Jordan 2006).¹¹ I applied the topic model to obtain a clustering of all the press releases.

Even though the nonparametric topic model is a widely used tool for document clustering, the bottom line of Figure 4.3 shows that the expressed agenda model is evaluated as having significantly better clusters. This demonstrates the importance of the author structure to produce categorizations that are useful for social scientists. This comparison is particularly informative because the nonparametric model is closely related to the statistical model I develop, but fails to incorporate information about the author of press releases. Therefore, this demonstrates the importance of the author specific information for text classification.

¹¹Grimmer (2009) describes the Dirichlet process prior in detail, along with the particular variational approximation used to estimate the model. The model is nonparametric in the sense that the number of clusters grows with the documents.

4.5 Assessing Validity of Estimated Priorities

In addition to validating the estimated topics, I also need to demonstrate that the estimated priorities from Senate press releases reflect substantively interesting behavior. Throughout the book I will find evidence that the estimated priorities are capturing interesting political phenomena. Here, I perform several explicit validations based on intuitive expectations from the study of Congress and the expected behavior of the measures of home style. If the examples seem obvious, that is precisely the point: before using the model to examine home style's role in representation, I first need to demonstrate the validity of the measurements.

4.5.1 Committee Leaders Focus on Their Committee's Issues

Members of Congress have strong incentives to emphasize their positions of power within the legislature. Fenno (1978) explains, "House members explain their use of power in Congress because they believe it will help them win renomination and reelection" (Fenno 1978, 139). Elected officials also portray themselves as powerful to be perceived as creating effective policy (Fenno 1978) and legislators are likely to have strong personal interest in the issues that come before committees they lead (Fenno 1973). An implication of Fenno's (1978) argument is that leaders of Senate committees—chairmen and ranking members—should allocate more attention to issues that fall under the jurisdiction of their committee than other senators. This straightforward explanation provides an ideal test of the validity of the estimated priorities.

Employing the results from my statistical model, Figure 4.4 carries out the comparison between prominent committee leaders and the rest of the Senate.¹² In Figure 4.4 committee

¹²In addition to committee leaders on standing committees, I also included subcommittee chairs on the Appropriations committee, due to the prominence of committee membership and the large and diverse nature of the appropriation bills considered.

leaders' average attention dedicated to an issue under their committee's jurisdiction is compared to the average attention among the other 98 senators for 40 committee-topic pairs, for each year in the analysis. The left-hand vertical axis denotes the topics that were used for the comparison and the right-hand vertical axis contains an abbreviated committee or appropriations subcommittee name. The solid dot represents the expected difference between committee leaders and the rest of the Senate, the thick lines are 80 and 95 percent highest posterior density (HPD) intervals, respectively. If committee leaders discuss issues related to their committee more often, then the estimates should be to the right of the vertical dotted line at zero.

Figure 4.4 shows that committee leaders allocate more attention to issues under their committee's jurisdiction than the average senator. For almost every topic committee pair in each year, leaders of Senate committees allocate substantially more attention to issues under their jurisdiction than other senators. For example, in 2006 Joseph Lieberman (ID-CT) and Susan Collins (R-ME)—chair and ranking member of the Homeland Security and Governmental Affairs committee, respectively—averaged about 6 percentage points more attention to homeland security than other senators. The largest difference between committee leaders and the rest of the Senate corresponds to the Foreign Affairs committee whose chairman, Joe Biden (D-DE), discussed the Iraq war in 48% of his press releases—15 percentage points more than the closest senator. This example demonstrates that the statistical model is able to retrieve Fenno's (1978) observation that legislators will attempt to highlight their position of power in communications.

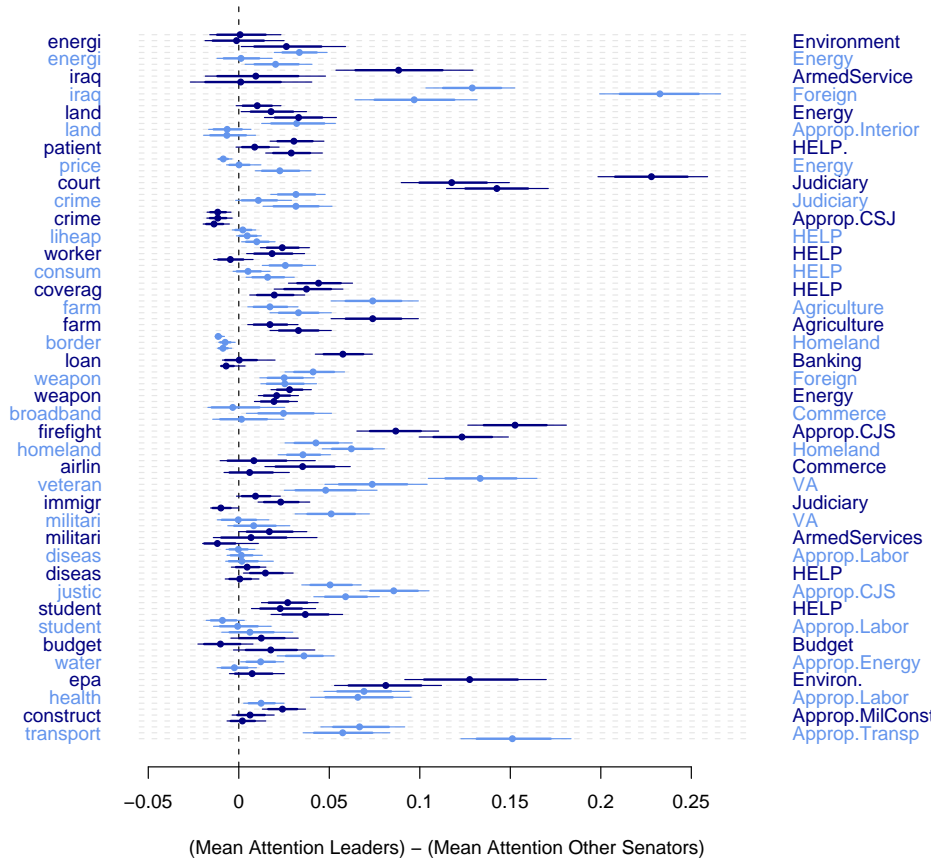


Figure 4.4: Chairman and Ranking Members of Committees Allocate More Attention to Issues Under Their Committees’ Jurisdiction than Other Senators

This figure compares the attention that Senate committee leaders—chairs or ranking members—dedicate to topics under their committee jurisdictions to the attention allocated by the rest of the Senate. The solid black dots represent the expected difference, the thick lines are 80 percent credible intervals and the thin lines are 95 percent intervals. Along the left-hand vertical axis the topics are listed and on the right-hand side the corresponding committee names are listed. As this figure clearly illustrates, committee leaders allocate substantially more attention to issues under their jurisdiction than other members of Congress.

4.5.2 Validating Measures of Credit Claiming

Throughout the book, we will use aggregate measures of how often senators claim credit for federal funds allocated to their state. Therefore, we need to be sure that our measures

of *credit claiming* behavior are valid: we need evidence that the label that I apply to this aggregated category actually captures legislators claiming credit for funds. To perform this validation I look for convergent validity, or use a second measure of credit claiming in press releases and verify that the two measures are strongly correlated.

To obtain this second measure, I employ a state of the art supervised learning method—a method for the statistical analysis of text that requires the categories to be set *a priori* (Hopkins and King 2009) to explicitly measure how often legislators credit claim about appropriations in their press releases. If the supervised and unsupervised estimates are highly correlated, then there is strong evidence that the estimates of credit claiming from the unsupervised model are valid. To create a training set, I worked with a research assistant to develop a set of categories that included position-taking, credit claiming, and advertising (adhering to the Mayhew conceptualization). I then sampled 500 press releases and asked the research assistant to classify the press releases into the categories. This served as the training set for the remainder of the press press releases.

Figure 4.5 plots the estimated credit claiming frequency from the supervised model (vertical axis) against the unsupervised model (horizontal axis), and the colors correspond to the types of senators identified by the model (and to be discussed in more detail in Chapter 5). This shows that the supervised and unsupervised estimates clearly agree, with convergence of the two measures along the 45-degree line, reflecting the strong correlation between the two measures (0.79). This is strong evidence that the unsupervised model provides valid estimates of credit claiming—estimates that are just as good as a supervised model. The key difference, however, is that the model was able to *discover* the categories that constitute the appropriations measure, whereas a supervised model would have required us to know beforehand that credit claiming would be an important component of

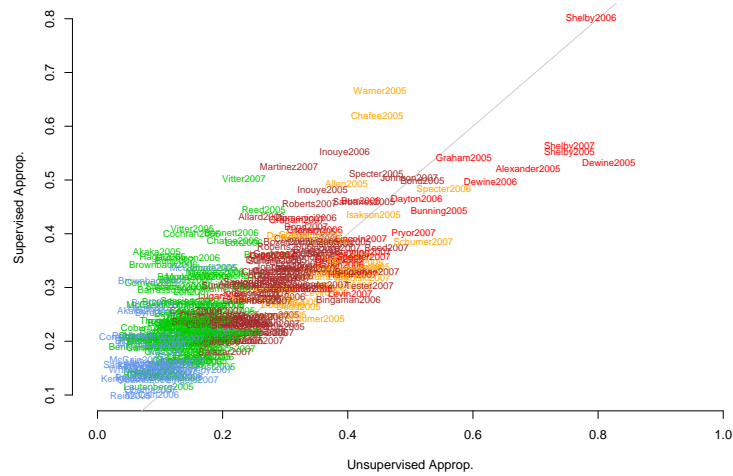


Figure 4.5: Validating the Measures of Credit Claiming

This figure provides a validation of the unsupervised learning methods measures of credit claiming. To perform the validation, I used a supervised learning model to measure the proportion of press releases senators allocate to claiming credit. I plot this (on the vertical axis) against the measure from the unsupervised model (on the horizontal axis). The strong correlation between the two measures provides a validation that the unsupervised learning model is capturing credit claiming behavior.

what senators do in press releases. This would be difficult, given the absence of credit claiming from many typologies of Congressional speech (e.g., Sulkin 2005, Schiller 2000).

4.5.3 Expressed Priorities Cluster Geographically

Not surprisingly, studies of legislative behavior have found that the priorities legislators pursue in Washington and emphasize to constituents vary by location. Arnold (1992) argues that this variation occurs because of geographic specific costs and concentrated benefits to many of the policies enacted by Congress (Arnold 1992, 26). This provides legislators an incentive to emphasize issues persistently important to their constituents. For example, Fenno (1973) describes a senator from a Western state seeking a seat on a committee with jurisdiction over issues important to the “public-land” states (Fenno 1973, 139-140). If the

expressed agenda model and press-release data are recovering valid estimates of legislative behavior, then we should observe this geographic clustering along some issues in the estimated expressed agendas.

The left-hand plot in Figure 4.6 demonstrates geographic clustering of three issues: each line in the plot compares the attention senators from a geographic area allocate to an issue to the attention from senators who represent other states. The dot represents the expected difference, while the thick and thin lines are 80 and 95 percent, HPD intervals. The bottom three lines show that senators from western states (as defined by the US census bureau) allocate substantially more attention to public-land issues than senators from other states, in all three years of press releases. This geographic clustering is also reflected along other topics and in other areas. The middle three lines show that senators from Gulf-coast states allocated more attention to hurricanes in their press releases than other senators, and the top three lines show that senators from states that share a border with Mexico allocate a much higher proportion of press releases to border security than other senators.

Senators from states with similar concentrated interests may also have incentive to discuss the same issues, a pattern observed in the right-hand plot of Figure 4.6. The right-hand plot shows that this is the case: senators from agricultural states allocate more attention to farming than other senators. The horizontal axis represents the number of farms per resident of the state (one measure of agriculture's importance to a state) and the vertical axis indicates the proportion of press releases allocated to agricultural issues.¹³ The red-lines are loess curves indicating the relationship between the number of farms per capita and the attention to agriculture. Each red-line represents this relationship for one draw from each senators expressed agenda, while the solid-blue line indicates the average relationship

¹³The number of farms per-state were obtained from the US Department of Agriculture.

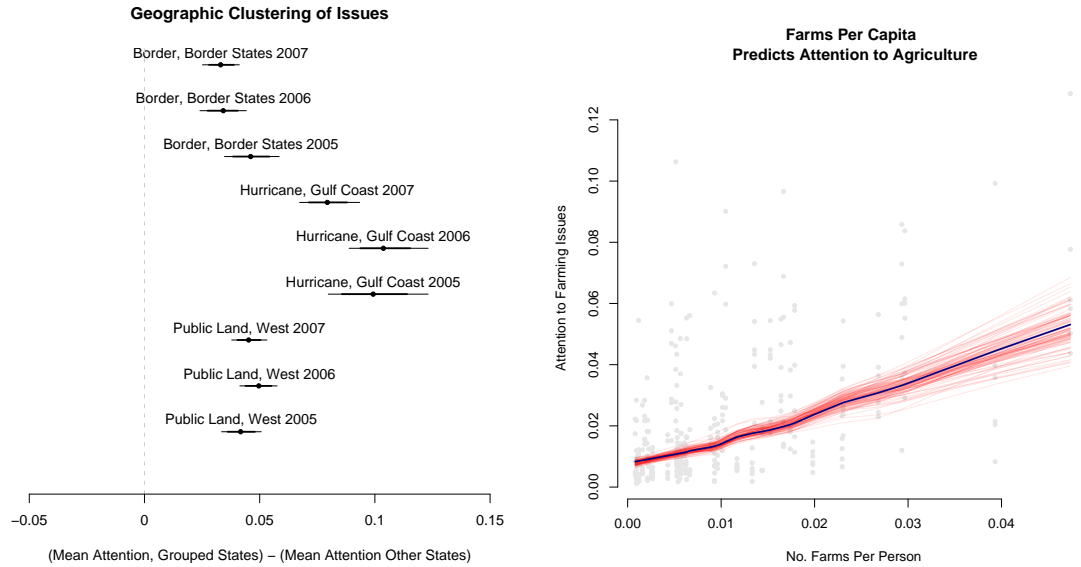


Figure 4.6: Attention to Issues Follows Expected Geographic Patterns

This figure demonstrates that senators’ expressed agendas are grouped geographically. The left-hand plot shows that issues contain some geographic clustering. In this plot, each line compares the attention senators from a geographic area allocate to an issue to the attention from senators who represent other states. The dot represents the expected difference, while the thick and thin lines are 80 and 95 percent, HPD interval. The right-hand plot shows that senators from states with a large number of farms per person also tend to allocate more attention to agriculture issues. The horizontal axis represents the number of farms per resident of the state (one measure of agriculture’s importance to a state) and the vertical axis indicates the proportion of press releases allocated to agricultural issues. The red-lines are lowess curves indicating the relationship between the number of farms per capita and the attention to agriculture, while the blue-line is the average relationship.

between farms per capita and the proportion of press releases allocated to agriculture.¹⁴ The lowess curves slope upwards, indicating that attention to farming appears to be strongly related to the concentration of farms in a senator’s state.

Taken together, the three plots in Figure 4.6 demonstrate that the expressed agenda model is able to retrieve geographic and interest based clustering in expressed agendas: an intuitive property of explanations well-established in the qualitative literature on Congressional communication.

¹⁴The gray points in the background represent each senator’s expected attention to farming issues.

4.6 Conclusion

In this chapter I introduced a statistical model to systematically measure a critical component of legislators' home styles: the priorities expressed to constituents. This provides the first comprehensive, systematic, and verifiable measure of legislators' home styles. I demonstrated how the model efficiently estimates the topics in a collection of texts, classifies each document according to the topics, and measures the attention each senator allocates to the topics. Further, the use of fully Bayesian inference ensures that our uncertainty about senators' expressed priorities are reflected in our estimates. A series of validations demonstrated that the model was able to identify politically relevant topics and expressed priorities.

Throughout the rest of the book, I use the estimated priorities and topics from this model to explain why home style is essential to understanding how political representation actually occurs. To make the inferences from the model more robust, I supplement the estimates from the model with a variety of evidence—both quantitative evidence from different models and methods and qualitative evidence acquired in interviews and through secondary sources.

Chapter 5

A Typology of Home Styles in the US Senate

Abstract: Formal models of legislative behavior predict that reelection oriented senators will focus exclusively on appropriations and constituency service and avoid position taking. In contrast to these expectations, I demonstrate that senators articulate diverse priorities in their home styles, reflecting their multiple goals and motivations. Some senators regularly take positions on prominent issues and shun claiming credit for federal funds, while other regularly claiming credit for federal money and rarely taking positions on controversial issues. To describe the broad differences in how senators communicate with their constituents, I use the typology estimated by the statistical model developed in Chapter 4. The typology captures how different groups of senators tradeoff between pork and policy. This tradeoff also represents an important validation of the measures of home style providing *convergent* validity with a spectrum first introduced in Fenno (1978). The diversity in Senate home styles provides further evidence for the broader characterization of representation. How senators balance between claiming credit and position taking is important for representation, but missed entirely if we restrict our attention to roll call votes alone.

5.1 Introduction

In Chapter 1 I demonstrated that Jeff Sessions and Richard Shelby provide two very different types of representation to their constituents, even though the two senators have extremely similar voting records. Jeff Sessions portrays himself in press releases as policy focused, emphasizing his work on immigration reform and his role in judicial nominations. When in Washington, Sessions uses his prominent position on the judiciary committee to maintain a very policy focused style. In contrast, Richard Shelby invests substantially more resources emphasizing the resources he secures for Alabama. Shelby's office is much more likely to release a press release touting a grant for a fire department or an defense appropriation than offer criticism or praise for new policy proposals in the Senate.

In this chapter, I show that the comparison of Jeff Sessions' and Richard Shelby's style captures the most important variation in Senate press release. When senators explain and present their work to constituents they divide their attention between policy focused statements and claiming credit for money for their state. As a result, senators' home styles lie on a pork-policy spectrum. At one end of the spectrum are legislators who develop home styles similar to Jeff Sessions', focusing almost exclusively on nationally important policy issues. At the other end of the spectrum are senators who behave like Richard Shelby, emphasizing relatively small grants allocated to their state.

The diversity in homes styles demonstrates that members of Congress are more than "single-minded reelection seekers" (Mayhew 1974). Rational choice models assume that legislators are only concerned with reelection and as a result members of Congress focus exclusively on appropriations and constituency service, avoiding substance altogether (e.g., Fiorina 1977). But the variation in legislators' home styles reveals that many senators care about goals beyond reelection—they also have progressive career ambitions and personal

policy goals. The result is much more position taking and policy discussion than previous models predict.

The identification of the pork-policy dimension underlying the expressed priorities also provides a validation of the home styles measured in this book. Fenno (1978) identified a similar kind of variation among the representatives he observed (of course, for a much smaller number of legislators observed on a smaller number of days). Therefore, the unsupervised learning method, with very little structure, is able to retrieve a crucial kind of variation in home styles, first observed using intensive participant observation. This exemplifies the power of the statistical model developed in Chapter 4, while also demonstrating that the measured home styles are conceptually similar to the original measurements described in Fenno (1978).

5.2 The Types of Home Styles in the US Senate

In this section, I describe the typology of home styles estimated using the statistical model from Chapter 4. As I will demonstrate, this typology classifies senators based upon the balance of position-taking and claiming credit in their press releases. The model identifies five *styles* or types of home styles (with the number of styles selected using the Bayesian Information Criterion, described in Appendix A). It is useful to think of the typology of senators' home styles as a second level of clustering—the first level is the clustering of press releases into topics. At the second level, the model groups together senators who articulate similar home styles. Senators assigned to the same cluster, or who have the same “type” of home style, all articulate similar expressed priorities. Each style serves as a rough approximation for senators' home styles (expressed priorities) classified to that style. Therefore, the styles represents a useful tool for identifying the broad differences in how

senators communicate with their constituents.¹

Figure 5.1 visualizes the five types of home styles the model identifies. To generate this plot, I calculated the distance between each pair of senators' expected expressed priorities. To offer a quick visualization of these distances (and to help identify the structure underlying the expressed priorities) I use a classic multidimensional scaling algorithm to identify the two most important dimensions underlying senators' expressed priorities (Cox and Cox 2000). Each senators' name (the small words) are color-coded according to the senator's most probable home style. Two names will be close together on this plot if those two senators express similar priorities, whereas two names will be far apart if those senators articulate very different priorities to their constituents. The large words are labels that I generated to summarize the distinguishing features of each type. Figure 5.1 will provide a useful map for exploring the different types of senators' home styles, even though it represents a substantial simplification of both the typology and expressed priorities identified using the statistical model and press releases.

To better understand the variation underlying Figure 5.1, Figure 5.2 visualizes senators estimated priorities—the information that determines the typology of home styles described in this chapter. Each row of the plot represents a senator's expected home style—the expected proportion of press releases assigned to each topic. Each column represents a topic and each cell captures the proportion of press releases a senator allocates to a topic. The darker the cell, the more attention a senator allocates to the topic. The senators are sorted according to their type of home style and then by their position on the horizontal axis in

¹It is crucial to remember that each style described below is only an approximation for how senators communicate with their constituents and that there is variation around the individual styles. Further, the “types” described below could obscure that senators will engage in a diverse set of activities, even if they are described as focusing primarily on one type of activity. To better understand how senators divide their attention in their press releases, we will focus on properties of individual senators throughout the rest of the book.

Chapter 5. A Typology of Home Styles in the US Senate

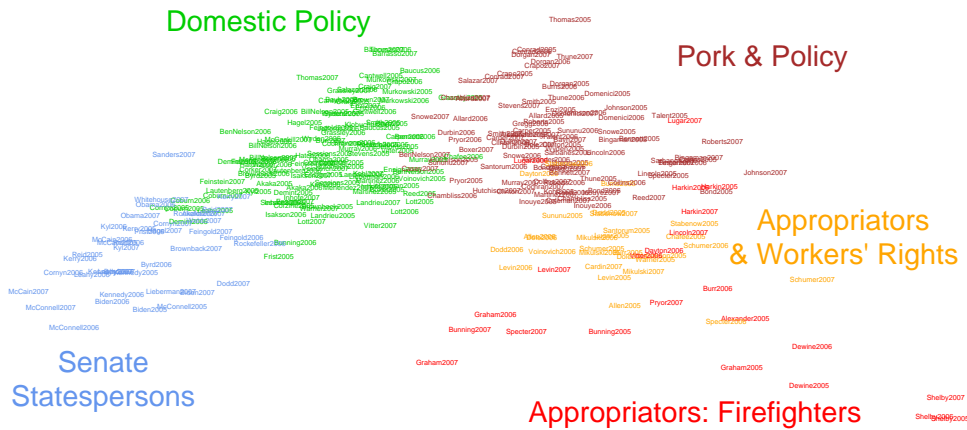


Figure 5.1: A Typology of Home Styles in the US Senate

This plot represents the typology of home styles. To generate the plot, I calculated the distance between each senator’s expressed priorities and then used a classic multidimensional scaling algorithm to project the distances to two dimensions. Senators are then color-coded according to their most probable type.

Figure 5.1, so moving from the top of the matrix to the bottom provides a description of how expressed priorities change as home style types change. The columns are sorted to group together topics that were semantically similar. The far-left columns represent topics about major national policy issues, columns in the center are about domestic or regional policy issues, and the right-hand columns describe press releases where senators are claiming credit for federal money.

Figure 5.2 reveals that there are substantial differences across groups of senators in how they allocate their attention to topics in their press releases. I now describe the different types of home styles in the Senate, who adopts those styles, and why the differential styles are important for representation.

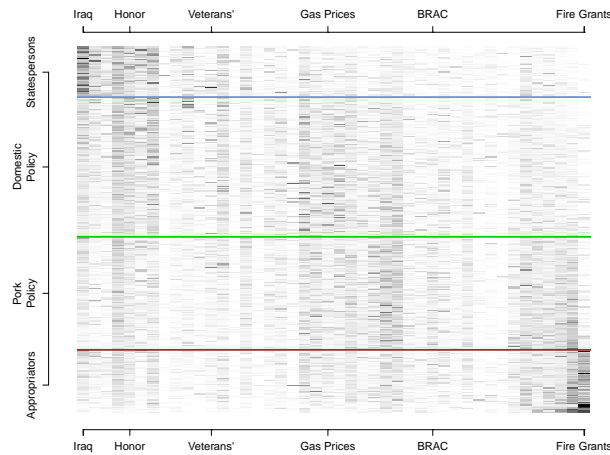


Figure 5.2: Visualizing Senators Expressed Priorities

This figure visualizes senators’ expressed priorities. Each row captures how a senator allocates their attention over the set of topics (the columns). The senators are sorted according to their type and then by their location in Figure 5.1 and columns are sorted to group together topics that were semantically similar. The far-left columns represent topics about major national policy issues, columns in the center are about domestic or regional policy issues, and the right-hand columns describe press releases where senators are claiming credit for federal money. Darker cells are indicative of senators allocating more attention to a topic.

5.2.1 Senate Statespersons

At the far left of Figure 5.1 and at the top of Figure 5.2 are Senate “statespersons”: senators who regularly take positions in their press releases and rarely claim credit for appropriations directed towards their states. Senators who are statespersons exhibit home styles that run counter to expectations from rational choice models of legislative behavior. Rational choice models of distribution suppose legislators are “single minded seekers of reelection” (Mayhew 1974) who maximize the federal money allocated to their state (e.g., Weingast, Shepsle and Johnsen 1981, Shepsle et al. 2009) and claim credit for as much money as possible (Arnold 1979).

Reelection oriented legislators should focus their attention on claiming credit for funds, rational choice models theorize, because credit claiming is always more beneficial than

position taking (Fiorina 1977). Credit claiming, these models argue, can only help an incumbent. After all, citizens are assumed to universally want more money for their state and legislators are expected to secure that money in Congress. The result is that claiming credit for money increases support among all constituents. Position taking is a far riskier strategy and will decrease support among some constituents. Unless a policy is universally supported, position taking will split constituents into those that agree with the representative and those who oppose the representatives' positions. And broadcasting disagreements to constituents is a sure way to lose support (Fiorina 1977).

But not all senators are focused solely on reelection and as a result, the calculus of position-taking and credit claiming are complicated (and perhaps inverted). For the ambitious senator, failing to take positions or emphasizing pork too much can be damaging. This is particularly true for senators who seek the presidency, who may face a penalty for focusing too much on appropriations. For example, John McCain used Barack Obama's earmarks to attack Obama's credibility on reducing the deficit during the 2008 presidential election. Further, senators running for higher office need to appeal to their party's base in order to secure the presidential nomination and to do this, the senators are expected to take positions on important issues.

For senators who aspire to be president— John McCain, Joe Biden, Hillary Clinton, Chris Dodd, and Barack Obama—Senate press releases are a venue to display their policy acumen and knowledge of major policy issues. Not surprisingly, 4 of the 5 presidential candidates are statespersons, with Hillary Clinton (D-NY) the lone non-statesperson (and I will show in Chapter 6 that senators become statespersons when they begin their presidential campaign). With their focus on higher office, presidential candidates are willing to risk controversy in their states to generate support for their presidential bid.

Party leaders and policy focused senators in the Senate share similar decision calculus with presidential candidates and therefore use their press releases to make major policy announcements and to make the case for or against policy proposals. The policy and partisan goals of these senators makes position taking a necessity. Given the importance of policy leadership for Senate leaders, it is not surprising that both the Democratic and Republican leaders—Bill Frist, Mitch McConnell and Harry Reid—are statespersons. Other senators who are known for their prominent role in national policy debates, like Democrats Ted Kennedy, Pat Leahy, and Republicans Jon Kyl and John Cornyn also adopt statesperson focused home styles.

Senators are classified as statespersons because of their focus on salient national and international issues. For example, statespersons focus substantial attention on the United States' involvement in Iraq, with the average statesperson allocating 13% of their press releases to the Iraq war, while other senators use only 3% of their press releases to Iraq. The left-most column in Figure 5.2 describes senator attention to the Iraq, with Senate statespersons clearly allocating more attention to the war than any other group of senators (as indicated by the much darker squares for senators in this group). Statespersons also focus on other international issues. For example, statespersons are much more likely to issue press releases about the Foreign Intelligence Surveillance Act (FISA), which became a major issue after telephone companies revealed they cooperated with domestic wiretapping. When statespersons discuss domestic issues, they focus on broad policy issues. Statespersons allocate twice as many press releases to the *budget* and *immigration* than non-statespersons.

An aversion to pork also distinguishes statespersons from other senators. Statespersons rarely claim credit for funds allocated to their state and are much more likely to be critical of the distribution of appropriations. The average statesperson issued only 31 press releases

per year claiming credit for funds to their state, whereas other senators average about 72 press releases per year to claim credit for funds to their state. Candidates running for president and national party leaders often feel pressure—from constituents and opponents—to avoid the scramble for appropriations that other senators use to build support among constituents. After all, it is hard for a candidate to appear presidential while announcing small grants to local police stations. But statespersons were more likely to discuss government transparency and the need to focus on appropriations reforms than other senators.

Statespersons are not completely focused on only major policy issues—they also regularly issue press releases to honor constituents. Statespersons allocate 7.5% of their press releases to commemorate national holidays or memorialize recently deceased constituents. Honorary press releases serve two important roles for statespersons. First, press releases commemorating holidays allows senators to articulate uncontroversial positions without claiming credit. Second, honorary press releases provide another way for the senators to maintain their appearance as dignified and nationally important politicians, an appearance crucial for the senators’ policy and career goals.

5.2.2 Domestic Policy Wonks

To the immediate right of the statespersons in Figure 5.1 are a group of senators I call “domestic policy wonks”: senators who focus upon domestic policy issues and allocate few press releases to claiming credit for federal funds. Similar to statespersons, this group of senators contradicts expectations from rational choice models of legislators: policy wonks avoid pork and emphasize policy in their press releases. But the content of the positions taken is different—senators in this group focus on policy issues that primarily affect how citizens live their day-to-day life.

Notice from Figure 5.2 that domestic policy wonks (located between the light-blue and light-green lines) allocate less attention to the topics in the far left-hand columns. Policy wonks are less likely to discuss the Iraq war and foreign policy than statespersons. Instead, policy wonks allocate more attention to the topics in the center of Figure 5.2, topics such as the environment, the current price of gas, and consumer safety regulation. All of these issues have broad policy implications, but reflect a greater focus on domestic issues for senators in this group.

Similar to statespersons, policy wonks have incentives to regularly take positions in their press releases. First, policy wonks tend to be leaders on committees and therefore are likely to have personal interests in the issues under their jurisdiction and are also likely to work on issues directly relevant to their constituents. This is true of Jeff Sessions, who regularly discusses judicial appointments and other issues that fall under the jurisdiction of the Judiciary committee. Similarly, Joe Lieberman, consistently issues press releases highlighting his work as ranking member and later chair of the Homeland Security and Government Affairs committee. By using their press releases, senators who lead major committees are able to describe their prominent positions on committees as well as influence the public debate around important issues (see Chapter 4).

Senators are also classified as policy wonks because of their focus on domestic policy issues that directly affect their region. This may occur after a major natural disaster that affects a large proportion of constituents, all of whom will expect their senators to carefully monitor federal response to the disaster. For example, Mary Landrieu and David Vitter are both classified as policy wonks, primarily because of their focus on FEMA and the Department of Homeland Security after Hurricane Katrina. Senators may also have incentives to regularly defend industries and resources in their states. Western senators, like Mike Enzi

(R-WY) and Larry Craig (R-WY), emphasize their role in protecting the cattle trade for their states, or their role in protecting the public lands in the state.

Senators may also have incentive to emphasize policy issues they had engaged before going to the Senate. This allows senators to maintain expectations about the type of representation they will provide constituents—expectations that could have been developed during a campaign or through the senators prior public service in the state (Sulkin 2005). Amy Klobuchar exemplifies this type of senator, who was known for her work on consumer safety as a prosecutor in Minnesota before going to the Senate. In the Senate, she uses her press releases to emphasize her continued focus on consumer safety regulation.

5.2.3 Pork and Policy

While statespersons and policy wonks emphasize policy when communicating with constituents, the “Pork and Policy” type (the brown group located to the right of the domestic policy wonks) are a group of senators who try to avoid the tradeoff between claiming credit and discussing policy, attempting to regularly do both. Like statespersons and policy wonks, senators in this category regularly engage major policy issues. But unlike either group, these senators are not bashful about touting the money that is distributed to their state. The result is a strategy that is one-half Jeff Sessions and one-half Richard Shelby.

One reason for the adoption of this particular strategy is that senators may want to engage both a national audience and constituents in their home state. Hillary Clinton (D-NY) represents the best example of a senator whose goals forced her to represent two different constituents. By 2005, it was clear that Clinton intended to run for president in 2008, but to be a credible candidate for the presidency she needed to win reelection in her 2006 Senate race. To do this, she had to continue to establish her credentials as a senator who was re-

sponsive to New York, in spite of her limited time in the state (recall she moved to the state in 2000, shortly before running for Senate). To do this, Clinton regularly claimed credit for a wide variety of funding secured for her state, while simultaneously touting her proficiency on major policy issues. Clinton would regularly issue press releases that described how she challenged Secretary of Defense Rumsfeld, pressing “Secretary Rumsfeld on the Bush Administration’s handling of the war in Iraq ” (Clinton 2006*b*). But Clinton’s office also issued numerous press release claiming credit for seemingly inconsequential grants, such as “\$50,000 in Firefighter Grants to two fire departments in New York ” (Clinton 2005).

Figure 5.2 demonstrates how senators in this category straddle both appropriations and substance in their press releases. The pork and policy senators (located between the light-green and brown lines) allocate attention to the same substantive issues as domestic policy wonks. Pork and policy senators discuss farming policy, the cost of gas, consumer safety, and education policy. But pork and policy senators also allocate much more attention to topics located in the far right columns, the credit claiming topics. They allocate, on average, 29% of their press releases to claiming credit about federal funds, while other senators average only 20% (and statespersons average only 9% of their press releases). The result is a style that combines both substance and pork.

5.2.4 Appropriators: Firefighters and Worker’s Rights

At the far right of Figure 5.1 are two similar groups of “appropriators”: senators who focus almost exclusively on claiming credit for money allocated to their state. This group of senators are the pork maximizing legislators expected from rational choice models. Appropriators announce every grant or appropriation they can, to make clear their ability to

secure money for this state and avoid discussing substantive issues with constituents.

Figure 5.2 demonstrates the singular focus of these senators on appropriations (the rows of senators who are located below the brown line). The darkest columns—the topics that receive the most attention—are those on the far right. This includes topics about fire department grants (the far-right hand column), airport grants and funding for schools, hospitals, and police departments. Appropriators allocate 13.5% of their press releases to announcing fire department grants, while other senators use only 0.8% to announce fire grants. Similarly, 8.8% of appropriators' press releases claim credit for airport grants, which comprises only 2.8% of other senators' press releases.

Senators who face a tough reelection will employ an appropriations focused home style to bolster their electoral prospects—particularly senators who have difficulty with their party's base. Consider Mike DeWine (R-OH) in 2005 and 2006. DeWine faced three daunting challenges for his 2006 electoral campaign. First, the national trend was bad for Republicans as support for George W. Bush and the Iraq war began to erode. Second, the state trend was bad for Ohio Republicans, with a major scandal involving the governor and other Republicans diminishing support for the GOP in the state. Third, DeWine was a moderate Republican in the Senate and therefore not popular among the Conservative base. In response to this three-fold crisis, DeWine focused almost exclusively on claiming credit for money given to Ohio—fire grants in particular. In 2005, DeWine allocated 63% of his press releases to announcing grants to local fire departments and 81% of his press releases to credit claiming in total. The focus on appropriations was a strategy to distance himself from unpopular Republican policies that carried over to his reelection campaign: DeWine's campaign regularly ran an advertisement highlighting the grant money allocated to fire departments in Ohio during DeWine's time in the Senate.

But other senators who are electorally safe use their press releases to broadcast their efforts in the institution to secure money for their state. Charles Schumer (D-NY) and Richard Shelby, both renowned for their prowess securing money for their state and their electoral safety are appropriators in their press releases, allocating 52% and 75% of their press releases to credit claiming, respectively. In fact, appropriators allocated 42% of their press releases to credit claiming, whereas the average other senator allocated only 19% of their press releases to appropriations. Appropriators allocate significantly less attention to the Iraq war than other senators (13% of press releases among statespersons discuss the Iraq war, 3% of press releases among appropriators) and appropriators allocate almost no attention to transparency (0.8% of press releases allocated to transparency).

Senators in this group behave like pork-maximizing legislators often assumed in rational choice models of legislator behavior. If we were to focus solely upon their press releases, we would conclude that the primary motivation of appropriator senators is securing more money for their state (or, as we'll see in Chapter 8 creating the impression they are influential). But the appropriators comprise only one type of home style, with other senators focusing almost exclusively on position taking and policy pronouncements. In the next section I demonstrate that this diversity is substantively important and convergent with evidence from both interviews and prior scholarship.

5.3 From Statespersons to Firefighters: A Validation of the Home Style Measures

Figure 5.1 and the cases analyzed in Section 5.2 demonstrates that the diversity in senators' expressed priorities reflects the diversity in the goals senators have when representing their

constituents in the institution. Senators with ambition for the presidency adopt a “presidential” style, while other senators focused on the proximate goal of reelection focus on the money secured for the state.

In this section, I demonstrate that the spectrum analyzed in the previous section does in fact capture a trade off between pork and policy. Further, this spectrum represents an important test of convergent validity with the original conceptualization of home style from Fenno (1978). Figure 5.3 validates that the primary variation in senators’ home styles is the trade off between position-taking and credit claiming. Along the horizontal axis I have placed the proportion of press releases senators claim credit for federal funds (using the measure validated in Chapter 4), on the vertical axis I have placed the first-dimension from Figure 5.1, and the colors in Figure 5.3 corresponds to the types of senators discussed in Section 5.2.

The strong correlation between legislators position in Figure 5.1 and the propensity to credit claim demonstrates that this spectrum is measuring how legislators make the trade off between pork and policy. This spectrum captures substantively important variation that both Senate staff and previous scholars recognize. During an interview with a Senate press secretary, he revealed how the senator he works for struggles to balance appropriations and substance in press releases. The press secretary said that his senator wants to appear responsive to “local interests”. To do this, the senator wants to announce local grants and claim credit for money allocated to the state. But, the press secretary also said that senators “worry that too much pork identifies them with government waste” (Personal Interview). The senator decided to create a home style that balanced claiming credit for money and position taking on substantive issues (as expected this senator is classified within the pork and policy group by the model). Other senators face similar choices but make different

decisions—either to solely emphasize their policy work in Washington (statespersons and policy wonks) or to disregard policy altogether and emphasize appropriations (appropriators).

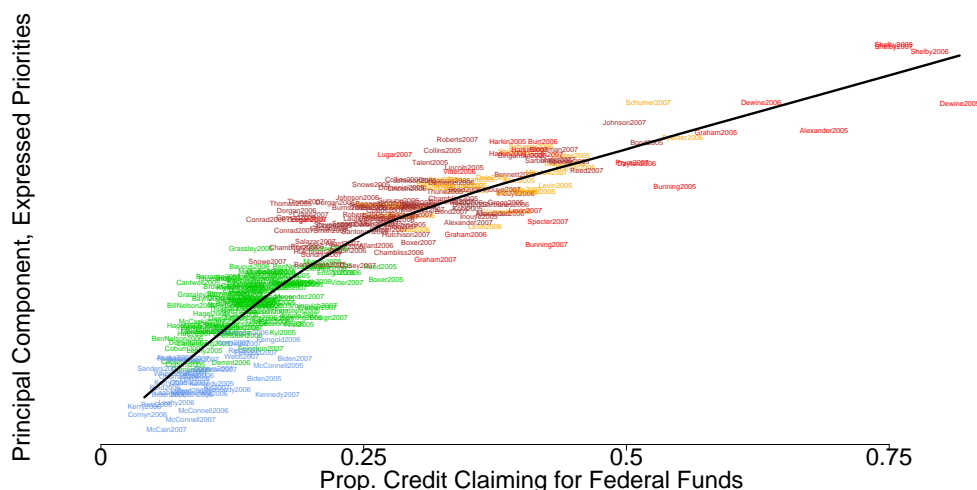


Figure 5.3: Validating the Policy-Pork Spectrum

This figure shows that the estimated priorities capture a tradeoff senators make between position-taking on issues and claiming credit for funds. The vertical axis is the first dimension from Figure 5.1 and the horizontal axis is the proportion of press releases senators use for claiming credit for funds. The strong correlation between the first dimension of Figure 5.1 and the proportion of credit claiming press releases indicates that this dimension captures the tradeoff senators make between claiming credit for funds and discussing policy with constituents. Further, this provides strong evidence that the concept measured by the statistical model corresponds to the concept of home style described in Fenno (1978): this spectrum was originally identified in Fenno (1978).

The pork-policy spectrum also demonstrates that the conceptualization of home style employed in this book shares important characteristics with the conceptualization employed in Fenno (1978). When describing how legislators *present* themselves to constituents, Fenno (1978) aligned a group of legislators “along a spectrum ranging from a style that is heavily weighted toward the cultivation of personal relationships to a style that is heavily weighted toward the discussion of policy issues” (Fenno 1978, 61). This spectrum shares important characteristics with the pork-policy spectrum described in Fig-

ure 5.1. Issue oriented representatives were similar to statepersons and located at one end of the spectrum. When describing one issue oriented member of Congress, Congressman D, Fenno (1978) describes a representative who “places special emphasis on articulating, explaining, discussing, and debating issues” (Fenno 1978, 94) and who “keeps his distance from the personal problems of his constituents” (Fenno 1978, 98). Congressman C is located in a similar place on Fenno’s spectrum and is described as “issue-oriented” (Fenno 1978, 81). There are many components to a person-to-person home style, but two key components are a focus on “local” issues and an aversion to discussing issues. Representatives who employ person-to-person styles cultivate the impression they are one of their constituents who ‘emphasizes dams, highways, and casework’ (Congressman E, quoted in (Fenno 1978, 107)) and “places very little emphasis on articulating issues” (Fenno 1978, 68).

Statespersons in my conceptualization are extremely similar to Fenno’s (1978) issue oriented legislators, while appropriators share important characteristics with the person-to-person representatives. This correspondence represents an important and subtle validation of my measures of home style. The statistical model, with very little structure, is able to retrieve variation first observed in Fenno (1978) and this variation captures substantively meaningful behavior. With this validation in mind, we will employ home styles throughout the book to describe how senators define the representation provided to constituents and to identify how these definitions are systematically related to what legislators do in Washington.

5.4 Conclusion

This chapter demonstrates senators articulate diverse home styles, evidence of legislators' multiple goals in the institution. This contradicts expectations from formal models that argue rational and reelection oriented legislators should converge upon appropriations as the best strategy to cultivate support among constituents (Fiorina 1977). But not all senators share the same decision calculus when deciding what to say in their press releases. Senators running for higher office or party leaders have incentive to insert themselves in the national debate and may face pressure to *avoid* claiming credit for federal funds in their press releases. In contrast, senators with the proximate goal of reelection allocate attention to appropriations, as the formal models predict.

The pork-policy spectrum of home styles provides a subtle validation that the measures of home style used in this book share important characteristics with the original conceptualization in Fenno (1978) and a balance that Senate staff mentioned in interviews. This demonstrates that the statistical model was able to capture substantively relevant variation in home styles. Combined with the validations in Chapter 4 this provides evidence that the measures of home style analyzed in this book capture substantively interesting behavior by senators. This chapter also presents evidence that home styles are an important component of legislators representational styles. Legislators define the type of representation they provide constituents in many different ways. And these types are impossible to identify using roll call votes and would be difficult to uncover using other data.

Using the measures of home style detailed in this chapter, the next chapter demonstrates that legislators adopt a *stable* home style. From year-to-year legislators' change their style very little, with the biggest changes in home style attributable to the replacement of legislators.

Chapter 6

Stable Home Styles

Abstract: Home style is important for representation on its own, providing insights into how legislators define the representation they provide constituents. In Chapter 5, I demonstrated that senators articulate diverse home styles, which demonstrates that legislators define many different types of representational styles that are impossible to measure using roll call votes. In this chapter, I show that legislators articulate *a* single, stable home style when communicating with constituents and show that this stability is consistent with legislators facing electoral pressure and maintaining stable goals throughout their term in office. Using the estimated home styles, I show that the variation *across* senators is much greater than the year to year variation in senators' home styles: constituents are electing a single representative, not a legislator who behaves like many different representatives over their term in office. Further, the biggest changes in home style occurs after a senator is replaced. While stability is the norm, senators who are running for president tend to move towards the "statesperson" category, adopting a more national and presidential home style.

6.1 Introduction

On February 19, 2007, Barbara Boxer (D-CA) announced that she was running for reelection—in 2010. During the press conference, she noted that she “can’t wait until the last minute” to start her campaign. She cited the limits on donations, the growing cost of campaigns, and her poorly run reelection campaign in 2004 as key reasons she needed such a long time to prepare for reelection. Political observers in California also speculated that the prospect of a challenge from then popular Governor Schwarzenegger motivated Boxer to declare her intention to run for reelection early. Other senators followed a similar strategy of announcing early—including perennially safe incumbents Daniel Inouye and Richard Shelby. But these are just the public announcements. With the potential electoral pressure on senators, we should expect that plans for reelection start much earlier.

Senate terms are three times as long as House terms, a difference that was intended to affect how senators represent their constituents. John Jay argued thought that granting senators “tenure of considerable duration” insulated senators from popular electoral pressures and would create an institution of stability to balance the House (Jay 2003). Qualitative studies of how senators represent their constituents and informal observations of the Senate suggest that the longer terms have the effect Madison desired. Indeed, one senator remarked in Fenno (1982) that “We say in the Senate that we spend four years as a statesman and two years as a politician” (Fenno 1982, 29).

How (and if) senators systematically alter the representation they provide constituents in the Senate is important for understanding representation. If senators change the type of representation during their term in office, then it would make little sense to describe the “type” of representation legislators provide to their constituents. This also would present a serious problem for the quality of representation in the Senate. If constituents were

attentive only immediately prior to an election, they would believe they are receiving a very responsive type of representation. But senators would actually be providing very different sorts of representation the majority of their term in office.

In this chapter, I demonstrate that legislators adopt stable home styles, indicative of a single *representational style* that is not systematically related to senators' election cycle. Using the estimates of senators' home styles, I show that senators rarely modify their home styles and most of the change in home styles is due to *replacement* rather than individual change. Legislators also rarely move into different "types" of home styles and in the rare instances when senators do change types, they move to the most similar styles. And there is no systematic relationship between a senator's class (when they face reelection) and the change in senators' home styles.

Supplemented with important insights from interviews, I argue that this stability is the product of two important dynamics in the Senate. Senators are now constantly engaged in a "campaign" for reelection. Consistent with this explanation, I show that when senators change their focus, they do systematically change their home styles: senators who run for president are substantially more likely to adopt a "statesperson" style. This stability also reflects senators who are maintaining relatively stable goals within the institution that are unlikely to substantially change during term in office.

Stable home styles have important implications for how we understand the representation senators provide constituents. Rather than attempting to appear responsive to constituents only at the end of the term, legislators feel pressure to adopt and maintain one style throughout their term in the Senate. The electoral pressure on senators and their stable goals makes it difficult for senators to "spend four years as a statesman and two years as a politician". The result is that the type of representation senators provide constituents is

best described as a characteristic of the representative. And if constituents want a change in the type of representation they receive then they need to elect a new senator.

Given the limited time frame of the press releases, the conclusions of this chapter require some circumspection. But, the stability identified in home styles is also observed in roll call voting behavior (Poole 2007). Further, the small amounts of change that are observed in senators' expressed priorities are consistent with the expectations of changes from previous studies. Variation that is consistent with the small changes in styles described in Sulkin (2005) and Shepsle et. al. (2009).

6.2 Senators Adopt Stable Home Styles

In this section, I demonstrate that senators articulate stable home styles that change very little from year-to-year. I compare the change individual senators' expressed priorities to the variation in expressed priorities across senators serving in the same year. The across senator variation is useful, because it indicates how much more stable senators' expressed priorities are relative to the differences observed across senators. If senators expressed priorities are just as volatile as the across senator variation in expressed priorities, this would suggest that senators are crafting "new" strategies each year, as if they were an entirely different representative. This sort of change might be expected if the type of representation senators' provide their constituents is highly responsive to senators' electoral cycle. In contrast, if senators' expressed priorities exhibit less change than the across senator variation, then this an indication that senators home styles are stable characteristics of the senator.

To measure the change in senators' expected expressed priorities I use the *block distance* measure, which captures the percentage point difference between two expressed priorities (Sigelman and Buell 2004). Formally, suppose we have two vectors of expressed

priorities π_1 and π_2 . The block distance between the two expressed priorities is given by,

$$\text{Block Distance}(\pi_1, \pi_2) = \frac{\sum_{j=1}^{44} |\pi_{1j} - \pi_{2j}|}{2}. \quad (6.1)$$

In words, the block distance is the sum of the absolute percentage point difference in attention to each topic.¹

Using the block distance, we can measure the year-to-year change in senators' expressed priorities. To fix intuition, consider Lisa Murkowski (R-AK). We will measure the change in Murkowski's expressed priorities by applying the block distance to her expressed priorities from 2005 and 2006 and again to her expressed priorities from 2006 and 2007. If Murkowski's expressed priorities remain completely unchanged, then the block distance is zero and if Murkowski completely changes how she allocates her expressed priorities, the block distance is 1.

Figure 6.1 compares the year-to-year change in senators' expressed priorities (light-blue line) to the distance across senators (dark-blue line) in each of the three years of the study and demonstrates that the year-to-year change in senators' expressed priorities is only a fraction of the change in the differences across senators serving in the same year. This shows that the change in senators expressed priorities from one year to the next is substantially less than the variation across senators. The average year-to-year change is 27 percentage points—about 0.61 percentage points per issue. The average difference across senators serving in the same term is 42 percentage points, or 0.95 percentage points per topic. All but one senator has expressed priorities more stable than the average distance across senators, indicative that the within senator variation is much smaller than the across

¹Throughout this chapter I use the expected priorities. The findings remain the same if we use the full posterior distribution. Technically, the block distance is not a norm, but this is relatively unimportant for the analysis conducted here.

senator variation.² If we measure the correlation between expressed priorities, we reach the same conclusion: the average correlation between years for the same senators is 0.67, while the average correlation across senators serving in the same year is only 0.27.

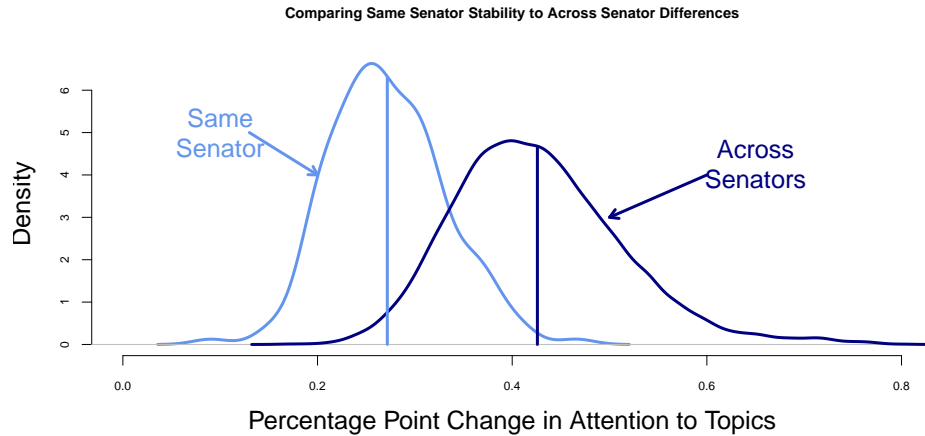


Figure 6.1: Comparing Within Senator Variation to Across Senator Variation

This figure compares the change of a single senators' expressed priorities to the variation in expressed priorities across senators. Senators' change their expressed priorities substantially less (indicated by the light blue line) than the variation across the population of senators in a given year (given by the navyblue line). This indicates that each year senators tend to replicate their expressed priorities from previous years, rather than behaving like a "new" member of Congress responding to electoral pressures.

The largest changes in expressed priorities are due to replacement: when new senators enter the Senate they tend to articulate priorities that differ substantially from the expressed priorities of their predecessor. Figure 6.2 demonstrates this, comparing the year-to-year change in senators' expressed priorities (the light blue line) to the change in expressed priorities after a new senator enters the Senate (the navy blue lines). After a replacement there is a much larger change in expressed priorities than the year-to-year differences in senators' expressed priorities: after replacement, the average change is 41 percentage points, 50 percent larger than the change for the average senator each year, with a small correlation of

²Lamar Alexander (R-TN) exhibits the largest change in his expressed priorities, due to a change in attention to fire department grants.

only 0.25.

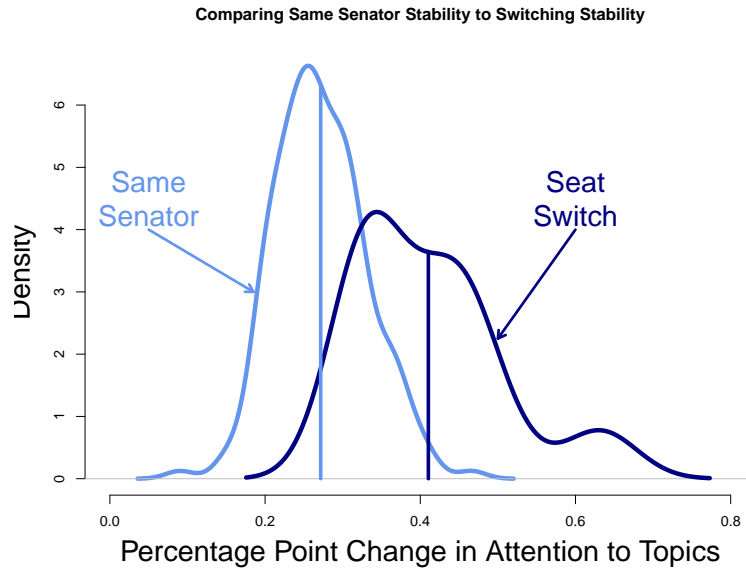


Figure 6.2: Comparing Same Senators’ Change to Seat Switching Change

This figure compares the percentage point change in expressed priorities of senators who remain in the Senate (light blue lines) to the change in priorities after a seat switches (the navy-blue line). After a seat switch there is a much larger change in senators expressed priorities than among senators who are in the Senate each year. After a seat switch, expressed priorities change by 14 percentage points more than without a seat switch.

Figures 6.1 and 6.2 are only able to assess relatively stability and demonstrate that senators’ expressed priorities. While senators articulate stable styles, there are some year-to-year changes in senators’ styles. To better understand this change, Figure 6.3 shows how senators’ types of home styles change from year-to-year. This figure visualizes a transition matrix for home style types: from home style type in 2005 to home style type in 2006 in the left-hand plot and the home style type transition from 2006 to 2007. For intuition about the plot, consider the second-row in the left-hand plot. Senators are placed in this row if they are classified as being a “domestic policy wonk” in 2005. Each cell in this row describes

the proportion of these senators that adopt each of the five possible home style types in 2006. If a cell is darker, the larger the proportion of policy wonks who adopts that style in 2006.

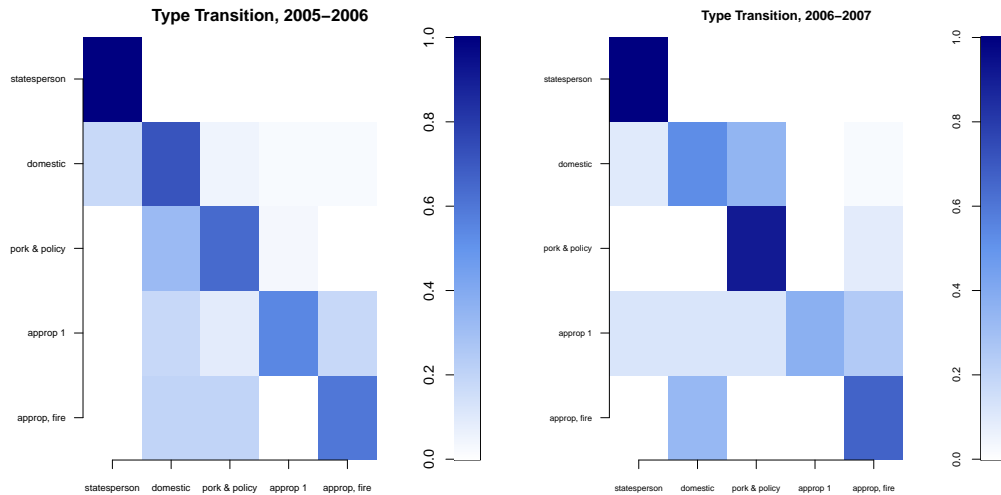


Figure 6.3: Senators Maintain the Same Type of Home Style

This figure visualizes a transition matrix for senators’ types of home styles, with the left-hand figure capturing the changes from 2005-2006 and the right-hand figure capturing the change from 2006-2007. The rows on the vertical axis describe senators’ home styles in the previous year (2005 for the left-hand side, 2006 for the right-hand figure) and the columns describe senators’ home styles in the subsequent year. The darker the color of the cell, the larger the proportion of senators who held a particular home style adopted the home style in the subsequent year. Notice, the darkest colors are on the diagonal, indicating that senators tend to maintain the same types of home styles. And when senators do change home styles, they tend to switch to home styles that are most similar to their current type.

Figure 6.3 demonstrates that while senators do change their priorities, the changes tend to be small with most senators maintaining the same home style from previous years. This is best demonstrated with the statesperson category (first row in both plots). Once senators adopt a statesperson home style type, they do not leave: for the transition from 2005 to 2006 and 2006 to 2007 all senators who were statespersons in previous years were statespersons in subsequent years. A cursory glance shows that senators occasionally change their type,

but the dark diagonals indicate that senators tend to maintain the same type of home style: sixty-seven percent of senators maintain the same home style in the current year that they had articulated in previous years. And when senators do change their types, the changes tend to be towards types that are similar to the home style the senator articulated in the previous year. For example, all senators who were domestic policy wonks (the green category in Figure 5.1) in 2005 maintained this style in 2006 or transitioned to statespersons or the pork and policy style. The appropriations categories are more volatile, but these categories are smaller and the majority of senators allocated to the two categories do maintain their appropriations focused home style.

Taken together, this evidence shows that senators maintain stable home styles and that the changes senators do make are on the margin, maintaining the same basic home style from year to year. Similar to the stable ideologies identified in roll call votes (Poole 2007), senators are articulating a set of priorities and then maintaining those priorities over time.

6.3 Stability from Pressure and Goals

Senators home styles are stable, indicative of a broader stability in how legislators represent their constituents. This stability, I will demonstrate, emerges from two sources. First, senators are now facing constant electoral pressure and are forced to run a constant campaign, similar to House members. Second, senators maintain stable goals and work hard to obtain their positions of prominence. The result is that senators have little incentive to change their home styles from year to year.

The electoral pressure on members of Congress is found in both popular press accounts of the Senate and senators' own statements. For example, in the introduction Boxer made very clear that she was not taking chances with her upcoming reelection and wanted to

begin earnest preparation early. A Senate staffer also expressed a similar sentiment in an interview. He conveyed that his senator was concerned that activities early in an Senate term can cause challengers to emerge. The senator worried that support can be easily lost and that potential challengers may decide to run very early in a campaign if they sense weakness. The result, according to the staffer, “is that we are always in campaign mode in our office” (Personal Interview).

The early declarations for reelection and the comments from the Senate staffer shows that senators worry that they will be judged in an election based on *what they have done for their constituents*, not just what the senator has done for her constituents in the two years prior to the election. Even if constituents are only aware of a senators’ activities before an election, potential challengers are regularly monitoring what senators do in Washington (Arnold 1992). And decisions to launch a challenge to a sitting senator must be made early: as Boxer noted, new campaign finance laws and the growing costs of running advertisements force candidates to raise even more money for a campaign. The result is that senators need to constantly worry about fending off potential challengers to ensure reelection.

An implication of senators articulating stable priorities due to the constant pressure from potential challengers is that the variability in senators’ expressed priorities should be unrelated to senators’ proximity to election. Figure 6.4 shows the change in senators’ expressed priorities, by senators’ class. This shows that senators up for reelection do not change their expressed priorities more than other senators.³ Each density curve represents the percentage point change in senators’ expressed priorities, measured using the block distance measure, for a given class of senators. (Recall that a class of senators are the third

³The ideal design would show that a senator’s expressed priorities were stable over their entire term, which require an even larger sample of press releases. Senators’ classes provide a useful approximation.

of the Senate up for reelection in the same year). Notice that senators from each class have similar distributions in their expressed priorities. In fact, senators who were up for reelection in 2006 (senators from class 1) exhibited the *most* stable priorities.

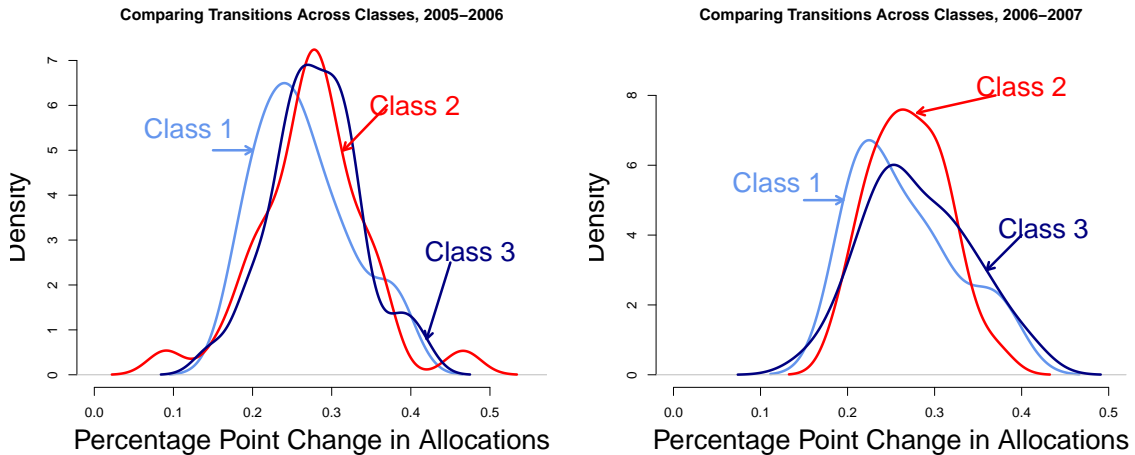


Figure 6.4: Change in Expressed Priorities is Unrelated to Senators' Class

This figure displays the percentage point change in expressed priorities across Senate classes. Notice that the distribution in change is unrelated to senators' class: senators up for reelection, Class 1, do not substantially change their expressed priorities more than other senators.

A second implication of this idea is that when senators run for other offices, they should change their focus. Consider the 5 senators who formally declared their candidacy for the presidency in 2008.⁴ In 2005, some of the candidates were already articulating expressed priorities that were presidential—John McCain and Joe Biden were focusing on the Iraq war and foreign relations more generally, consistent with their prominent positions in the Senate. But Barack Obama and Chris Dodd were maintaining home styles that focused more on their home states, with Dodd an appropriator in 2005 and Obama a domestic

⁴The six senators who declared their candidacy for president were Evan Bayh (D-IN), Joe Biden (D-DE), Hillary Clinton (D-NY), Chris Dodd (D-CT), Barack Obama (D-IL), and John McCain (R-AZ). Evan Bayh only was a candidate for two weeks and therefore will be dropped from the analysis.

policy wonk. But by 2007 both Dodd and Obama were focusing upon national policy issues. Obama shifted his focus towards the Iraq war and veterans' affairs and away from Homeland security grants in Illinois. Dodd leveraged his position as chairman of the Banking committee to drastically change his home style to focus on the mortgage crisis, the Iraq war, and foreign relations and completely stopped announcing grants and earmarks for Connecticut. In fact, all presidential candidates in 2007 but Hillary Clinton articulated statespersons home styles, whereas only a 1/3 of the candidates were statespersons in 2005. While a small sample size, this is an indication that senators facing a change in campaign pressure modify their expressed priorities.

A second reason for stability in senators' expressed priorities is that senators' goals change little from year-to-year. Consider, for example, Ted Kennedy (D-MA) and Chuck Grassley (R-IA). Both Kennedy and Grassley worked in the Senate for decades to obtain prominent committee leadership positions and to be recognized as major policy leaders. With their well established reputation, it would be exceedingly difficult for either senator to effectively change the perception of the type of representation they provide constituents. Other senators have similar well established styles and long-standing reputations with constituents, which can explain why no statesperson senators change their home style type during the study.

This section provides evidence that senators articulate stable priorities because of consistent electoral pressure and senators' stable goals. Senators from different classes exhibit the same level of stability in their expressed priorities and senators who are running for president modify their home styles to appear more presidential.

6.4 Conclusion

Senators' stable expressed priorities implies that they provide one *type* of representation to their constituents. When electing a representative to Congress, constituents receive a style of representation that is closely associated with their representative, rather than a legislator who provides many different types of representation over her term in office. While senators are often thought to "spend four years as a statesman and two years as a politician", senators are unable to exploit their long term in office to accomplish substantive and national policy goals early in the term and local and electorally motivated goals later in the term. Instead, senators are now entering the Senate and making a choice about how to represent their constituents, then consistently maintaining that style. Changes in styles occur only on the margins.

I have argued that this stability arises because senators now face constant electoral pressure. Senators are cognizant of the threat from potential challengers and to create a reputation of responsiveness among their most attentive constituents. Consistent with this explanation of the stability, the change in senators' expressed priorities is unrelated to their Senate class and senators' expressed priorities change when their electoral goals are changed.

Of course, there are likely many reasons that senators maintain stable home styles, consistent with senators having diverse goals and motivations in the institution. Senators tend to maintain their committee assignments, which influence senators' expressed priorities. Senators also have their own policy goals, which shapes what they focus on in the Senate. And constituencies change slowly and have persistent policy concerns—like farming in the Midwest and public lands in the West.

Regardless of its causes, the evidence shows that changes in home styles are unrelated

to senators' electoral cycle and that the biggest changes in expressed priorities are due to replacement. This is consistent with other research that has demonstrated that legislators maintain stable styles of representation in other areas, beyond their expressed priorities. Legislators rarely change how they vote in the Senate, with legislators maintaining very stable roll call behavior over their term in office (Poole 2007). Just as legislators appear ready to "die in their ideological boots" they also appear ready to maintain their same expressed priorities, even as tough elections approach. This, again, presents the constant pressure and stable goals that legislators face in the Senate: even votes very early in a term can come back as fodder for an opponent in a tough reelection campaign, just like a senator drifting their focus away from the state and towards national policy issues. And senators are unlikely to be able to effectively alter their voting patterns immediately before an election.

The observed variation in senators' expressed priorities is consistent with theories of legislative behavior that predict changes in priorities, because these theories rarely expect that senators will drastically modify their representational styles. Sulkin (2005) describes how senators modify their behavior in response to the issues opponents raise during a campaign. But legislators are likely to modify their expressed priorities slightly as potential opponents emerge in the run up to an election. As a result, senators across classes might be performing *uptake* similar to the type described in Sulkin (2005), even though their home styles are stable. Furthermore, Sulkin's (2005) theory does not suggest that senators will make drastic changes to their legislative styles after an election, but modify those areas that received attention during a campaign. Sulkin's (2005) theory is consistent with the small variation observed in senators' expressed priorities.⁵

This chapter has demonstrated that senators share Boxer's anxiety over upcoming elec-

⁵The technology used throughout this book could be employed to provide a broader test of the important theory of legislative uptake advanced in Sulkin (2005).

tions, even if most senators are not bold enough to start their campaigns so early. The result is that legislators are providing one type of representation to their constituents. This inference would be impossible without the comprehensive measure of home style that I introduce in this book. In the next chapter, I will demonstrate that the two major parties provide representation along the same issues, but have vigorous disagreements when discussing the same topics.

Chapter 7

Nonpartisan Home Styles, Partisan Arguments

Abstract: In the previous chapter, I demonstrated that senators articulate a stable home style and that this is indicative of a broader stability in the way senators represent constituents. In this chapter, I demonstrate that home styles are non-partisan: Republicans and Democrats articulate extremely similar expressed priorities. This finding is surprising in light of theories of issue ownership that suppose that members of each party have incentive to focus on the issues their party “owns”. But a closer examination of issue ownership theory reveals it is a poor fit for the Senate. I show that this similarity is the product of Republicans and Democrats engaging the issues when they are *salient*—either when major events happen in the institution or in response to prominent events or speeches. But members of Congress do differ in *how* they discuss the topics: Republicans and Democrats have public disagreements when discussing substantive issues. This demonstrates that Republicans and Democrats offer representation on the same topics, but with differing positions on those issues.

7.1 Introduction

On January 10th, 2007, George W. Bush introduced a controversial new plan for the Iraq war, which included adding 20,000 troops to calm the growing sectarian violence in Baghdad. The plan elicited a strong and public response from senators, with over 60 senators issuing a statement about Bush's proposal, constituting 67 total statements: 35 from Democrats and 32 from Republicans. Democrats were nearly united in their opposition to the proposal, with the general sentiment shared in Hillary Clinton's (D-NY) statement, "I cannot support his proposed escalation of the war in Iraq" (Clinton 2007). Republicans were less unified, but most were supportive of the president's plan echoing Lindsey Graham's (R-SC) belief that "The supplemental combat capability proposed by President Bush ... is a much needed change" (Graham 2007).

The reaction to the proposed surge is representative of a broader dynamic underlying expressed priorities. I demonstrate that senators from both parties tend to engage the same topics, and that this pattern emerges because both Republican and Democratic senators engage issues on days when those issues are salient. This contradicts expectations from issue ownership theory, which would predict Democrats and Republicans emphasizing different issues (Petrocik 1996). There are at least two reasons two explanations for the failure of issue ownership theory in the Senate. First, there are some issues that senators from both parties are able to use to their advantage. For example, both Republicans and Democrats are able to claim credit for money allocated to their state. Second, Democrats and Republicans recognize the costs of avoiding an issue altogether. Recognizing this cost, policy oriented senators from both parties will engage the same topics when the issues are salient, even if the opposing party "owns" an issue.

While the parties agree on what to discuss with constituents, they offer different view-

points when discussing the same topic. Democrats and Republicans regularly offer different justifications, explanations, and remedies for salient problems. This is evidence that there is a meaningful exchange of ideas that theories of issue ownership predict to be impossible. To demonstrate this, I employ and expand upon recent models to identify differences in partisan speech (Monroe, Colaresi and Quinn 2008). I apply the methods to two important and polarizing issues: the Iraq war and the price of gas. This reveals important differences in the ideas that parties use when arguing about the same topic.

The evidence in this chapter suggests that Democrats and Republicans are behaving as responsible parties and meet necessary conditions for deliberative representation (Committee 1950; Gutmann and Thompson 1996). Rather than talking past each other and failing to demonstrate differences on the same topics to constituents, senators from both parties regularly engage the same issues and explain the differences between the two parties on those issues. This implies that the most attentive constituents would be able to associate distinct policy proposals with each party and subsequently evaluate the parties based on those proposals. Rather than talking past each other, the parties are talking to each other.

To begin the chapter, I explain why issue ownership theory is a poor fit for Senate press releases.

7.2 Partisan Differences in Issue Attention

Theories of issue ownership predict divergence in the attention Republican and Democrat candidates allocate to issues during a campaign. Constituents' perceptions about the parties' relative ability to solve problems explains this divergence (Petrocik 1996). Parties are theorized to *own* different issues, or to be associated with a better ability to solve problems on a topic (Petrocik 1996; Simon 2002). For example, Republicans are thought to own

national defense and security, while Democrats are perceived to own domestic social problems (Sides 2006). The consequence of owned issues is that candidates will never discuss the issues their opponent owns (Simon 2002). Discussing issues the other party owns reminds constituents that the other party has a long history of performing well on the issue. This increases support for the opponent and decreases support for the candidate who raised the issue. As a result, discussing an opponent's owned issues is a strictly dominated strategy (Simon 2002). Therefore, Republicans and Democrats are expected to talk past each other during a campaign (Petrocik 1996; Simon 2002). Recent work has extended this logic of campaign behavior to how legislators behave in the institution, arguing that perceptions of issue ownership have implications for how members of Congress behave when voting and allocating their time in Washington (Egan 2009).

The precise and intuitively compelling predictions from issue ownership theory make it an attractive theory to extrapolate to the senators' behavior while in Congress. Senators' home styles are a type of campaigning: senators employ their home styles to highlight and explain their activities to constituents. Further, if constituents do believe that parties own some issues, then Republicans and Democrats should remain weary of engaging the other party's issues. If applied casually, issue ownership theory would predict party-based divergence in senators' expressed priorities, with senators emphasizing their party's advantaged issues.

But the basic logic of issue ownership in campaigns fails when applied to the Senate for two important reasons, resulting in an expectation that the two parties will focus on the same priorities when communicating with constituents. First, members of Congress never run against each other for reelection. This breaks down the zero-sum logic that drives the prediction that the parties will focus on different issues (Simon 2002). Instead, incumbents

from both parties can emphasize issues that are popular with the public and Republicans and Democrats could expect to see an increase in their vote total.

Perhaps the best example of an issue that both parties can emphasize to gain votes is claiming credit for appropriations and grant money. Both parties are likely to benefit from announcing money allocated to a state or district (Stein and Bickers 1994). And credit-claiming is not zero-sum, particularly for senators who represent different states and therefore claim credit for different grants.¹ The result is that Republicans and Democrats claim credit for money allocated to their state.

A second problem with applying theories of issue ownership to the Senate is that it neglects the potential for speech to persuade the public. If Democrats avoid discussing an issue altogether, Republicans will be able to shape the arguments and prolong the debate to drastically manipulate public opinion (Zaller 1992). Consider the most extreme predictions from issue ownership theory that opposing candidates will *never* discuss the same issues (Simon 2002). A simple thought experiment demonstrates that this would be disastrous for any party during a session of Congress. In 2006, Republicans faced a public that had grown tired of the war in Iraq and skeptical of how Republicans oversaw the conduct of the war. Democrats held a major performance advantage on the conduct of the war. Suppose, in response to this strategic disadvantage, Republicans decided to no longer discuss the Iraq war in 2006 (Petrocik 1996). Democrat leaders would use the silence from Republicans to focus the argument on the points that most emphatically made the Democrat party's point. And because Republicans would have struggled to move the war off the agenda, the Democrats would have the opportunity to maintain this focus on the war. Almost surely this would have increased the Republican losses in the 2006 midterm.

¹It appears that credit is more divisible than previously appreciated. Grimmer and Thomas (N.D.) show that senators from the same-state regularly send out joint-press releases announcing new funds to their state.

Senators know the disastrous consequences to their party of avoiding unpopular issues and therefore discuss even unpopular issues (Cox and McCubbins 1993). Many senators view themselves as national representatives (or statespersons) and therefore feel compelled to contribute to the public debate. Lindsey Graham (R-SC) provided vocal support for the surge, an important indication of support for the Bush administration from a senator who maintains a national profile as a leader in the Republican party. Other prominent Democratic senators, such as Ted Kennedy (D-MA) and Russ Feingold (D-WI), responded similarly: when debates are salient senators who are defacto spokespersons from both parties will engage the same issues to help shape the public message.

Senators' career ambition and personal interests provide further incentives for Democrats and Republicans to engage the same issues. As demonstrated in Chapter 5, senators running for president demonstrate that they are proficient in major policy debates and use every opportunity to create this reputation by offering substantive comments on salient topics. In response to the surge, senators from both parties who were running for president provided a detailed critique of the new policy. For example, Barack Obama (D-IL) said, "Tonight, against all military advice to the contrary, the President announced his intention to plunge us ever deeper into the quagmire of Iraq" (Obama 2007), while John McCain weighed in to support the policy.

The breakdown of the zero-sum competition of campaigns and the costs of senators avoiding debate results in a prediction that Republican and Democrat senators will engage the *same* issues, rather than talking past each other. But the discussion also suggests that the timing of senators' announcements will be similar, with senators focusing on salient new issues. When a new appropriation or grant is announced we should expect both Republicans and Democrats to both claim credit for the grants. And when a major policy proposal or

event occurs, we should expect both Republicans and Democrats to offer their opinion and contribution to the public debate.

With these expectations in mind, I now demonstrate that Republicans and Democrats articulate extremely similar expressed priorities.

7.3 Republicans and Democrats Articulate Highly Similar Home Styles

To compare Republican and Democrats home styles, I first create an aggregated home style, then employ an intuitive measure of distance between the expressed priorities. To aggregate each party's home styles, I took a weighted average of senators' expressed priorities, with the weight given by the number of press releases a senator issued.² The aggregated priorities will capture how Democrats and Republicans, on average, divide their attention over the topics the model identified. To assess the distance between senators' expressed priorities, I use the block-distance measure given by Equation 6.1.

Figure 7.1 compares the distance between the aggregated home styles to the distribution of distances between Democrat home styles (blue-lines), the distribution of distances between Republican home styles (red-lines) and the distribution of distances across parties (purple-lines), with the comparisons made in 2005 (left-hand plot), 2006 (middle plot), and 2007 (right-hand plot). Each plot shows that the aggregated home styles are substantially closer than any pair of individual senators' expressed priorities. For example, the most similar pair of home styles among Democrats in any year belong to Barbara Mikulski and Ben

²As a technical matter, I also subtracted the smoothing parameter α from the aggregated priorities. This ensures that the aggregated priorities are not artificially drawn together due to the repeated addition of common smoothing patterns. A well known result is that the sum of Dirichlet distributed random variables is also a Dirichlet distributed random variable.

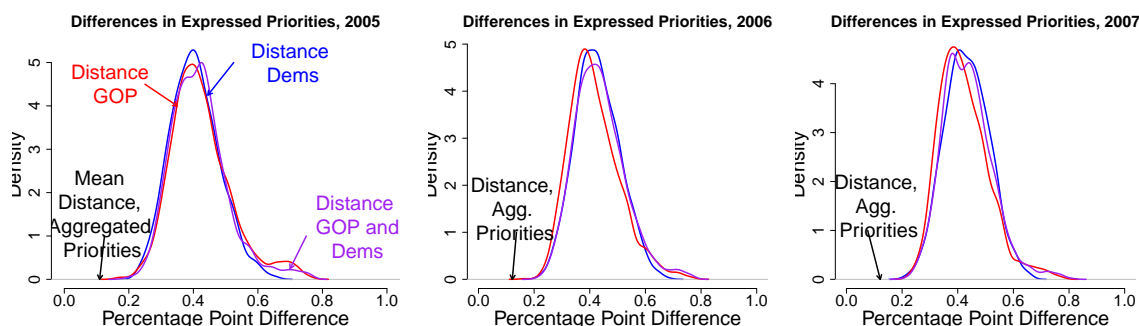


Figure 7.1: Aggregated Democrat and Republican Home Styles Are Extremely Similar

This figure compares the average distance between the aggregated Republican and Democrat expressed agendas to the average priorities between individual pairs of senators from the 2005 (left-hand plot), 2006 (middle plot), and 2007 Senate (right-hand plot). In each plot the blue lines represent the distribution of distances between Democrats, the red lines are the distribution of distances among Republicans, and the purple lines are the distribution of distances between Democrats and Republicans. In every year, the aggregated party expressed priorities are more similar than any pair of individual senators expressed priorities, strong evidence that in the aggregate the two parties focus on very similar issues. Each plot also demonstrates the substantial within party variation in expressed priorities, with the average distance across the parties almost identical to the average distance between home styles within the two parties.

Cardin (both D-MD) in 2007, with a distance of 0.20. But this is three times the distance between the aggregated priorities in 2007 (with a distance of 0.06).

Not only are the aggregated Democrat and Republican home styles incredibly similar, but there is substantial variation in home styles within each party. This provides further evidence that the partisan-based differences predicted by issue ownership are absent from senators' expressed priorities. The average distance across parties (0.43 in each year) is essentially the same as the average distance across home styles within each party (0.43 for Democrats and 0.42 for Republicans). The differences reflect that members of the same party adopt many different styles—from statesperson to appropriators—further evidence that the partisan based forces predicted by issue ownership theory are not operating in the Senate home styles.

Figure 7.1 indicates that the two parties emphasize similar topics in the aggregate, but

it hides any differences in attention on the individual topics where issue ownership theory makes its strongest predictions. Figure 7.2 demonstrates that the two parties allocate similar attention to the individual topics. This figure plots the expected expressed priorities of Democrats against the expected expressed priorities of Republicans. The black line represents the break-even line, where Democrats and Republicans allocate the same attention to each topic. The figure shows that the words cluster around the 45-degree line, demonstrating that Democrats and Republicans articulate a highly similar set of priorities. For example, both parties engage the Iraq war, even though the Republican position was increasingly unpopular with the public and both parties regularly discussed workers' rights, even though this is a stereotypical Democrat issue. And as this figure would suggest, the two parties expressed priorities are highly correlated (0.86).

7.3.1 The Daily Issue Convergence in Senate

The previous section demonstrated that senators from both parties gravitate towards the same issues: in the aggregate Democrats and Republicans articulate highly similar home styles and emphasize attention on a similar set of topics. In this section, I show that this convergence is the result of Democrats and Republicans both engaging issues when they are salient. This provides further evidence that senators from both parties discuss the same issues because of the incentives described in Section 7.2. When a grant or appropriation is released there is a scramble to announce the money. The result is that Democrats and Republicans converge upon the same topics on those days. Second, substantively oriented senators will attempt to react to news, committee hearings, or statements from other senators. The result is that senators from both parties issue press releases on the same day, about the same topic.

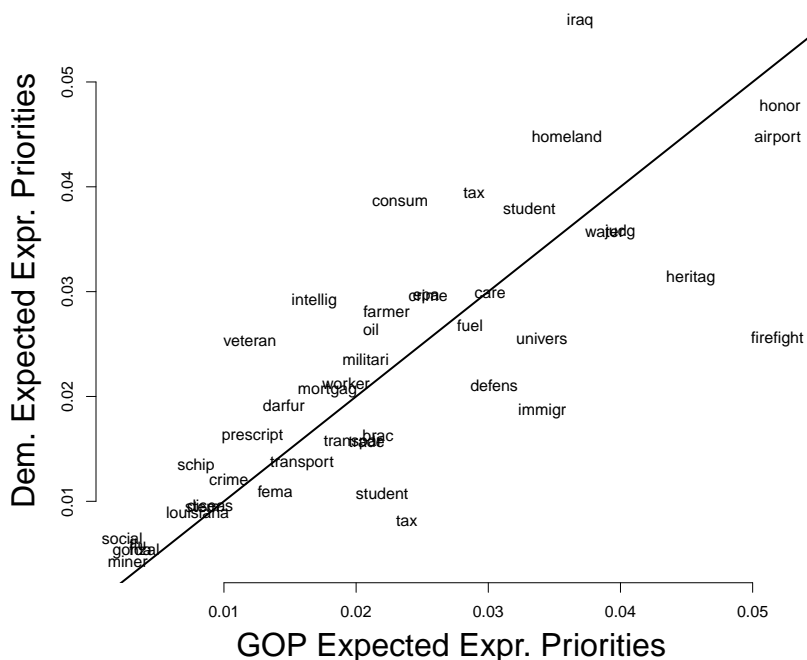


Figure 7.2: Democrats and Republicans Allocate Attention to the Same Issues

This figure shows that Republicans and Democrats allocate similar attention on each individual topic. The figure plots the aggregated Democrat home style (vertical axis) against the aggregate Republican home style (horizontal axis), and the black-line represents the parties allocating even attention to the topics. Notice, that there is a strong correlation between the attention the two parties allocate to the topics (0.79), indicative of Democrats and Republicans articulating very similar home styles.

In order to measure a topic’s salience, I use the number of press releases issued on the topic on a given day. The number of press releases is a useful measure of salience because it captures the total attention the Senate, as a whole, is allocating to an issue. I use the daily salience because attention to topics in Senate press releases tend to be “spikey” with substantial jumps on individual days when a major event occurs (see Chapter 4). There is no reason, *a priori* why high salience days must necessarily be the result of bipartisan issue attention. Senators are free to issue several press releases about a topic each day—and

often do when announcing appropriations for their state. Further, it could be the case that co-partisans coordinate their message on an issue, a phenomenon that would see salience increase but would result in attention from only one party.

To measure whether both parties are engaging the same issue on the same day, I first use an *engagement* index. For a given day t and issue k the engagement index will be measured as,

$$\text{Engagement}_{t,k} = 0.5 - |0.5 - \text{Prop. Press Releases Democrats}|.$$

The engagement index will be at a maximum (0.5) when there is an equal mix of press releases about an issue from Democrats and Republicans. The index will be at a minimum when only one party is issuing press releases about a topic.

The left-hand plot in Figure 7.3 plots the engagement index for each topic and day against the number of press releases issued on that day. This shows that as salience increases, the attention to the issue becomes more bipartisan. The red-line is a nonparametric regression of the engagement index on the number of press releases on a day and this line slopes upward, indicating that on days when issues are salient, attention to an issue is more bipartisan.³ The example of the surge used at the start of the chapter demonstrates why higher salience days would have more engagement from both sides. When a major new policy about the US involvement with Iraq is announced, senators from both parties have incentive to release a statement in support or dissent of the proposal. The result is that a high number of press releases are issued on a day and members of both parties author those press release.

³The low-salience days are left out of the figure to avoid simple numerical problems that arise from using proportions. If included, the relationship appears even stronger.

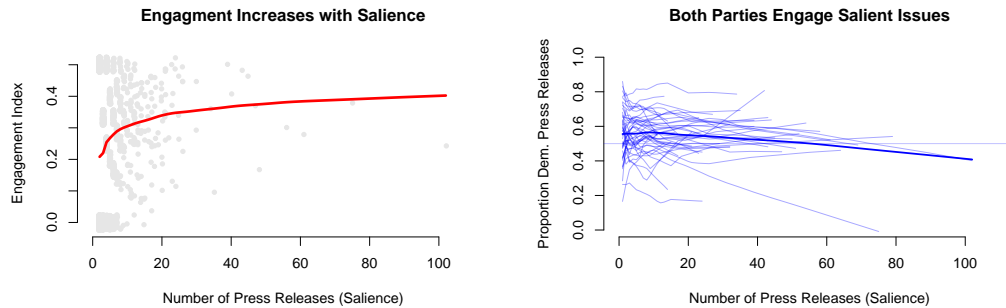


Figure 7.3: Democrats and Republicans Evenly Engage Salient Issues

This plot shows that when issues are salient both parties allocate equal attention to the issue. The left-hand plot shows that the partisan balance, or engagement, increases as an issue’s saliency increases. The horizontal axis represents the number of press releases about a topic, while the vertical axis is an engagement index. The red-line is a non-parametric regression of engagement on saliency. Notice, that as saliency increases both parties engage the issue more evenly. The right-hand plot presents a set of lines representing the proportion of press releases from Democrats, as each issue’s saliency increases. Most of the lines slope towards the 50 percent line, indicating the parties are allocating more balanced attention as saliency increases.

The right-hand plot in Figure 7.3 shows that a similar pattern is observed on almost every individual topic. Each of the light-blue lines in the plot capture how the proportion of press releases from Democrats covaries with the number of press releases issued on a day. The thick blue-line captures the average of the relationship across all topics. For almost each of the light-blue lines, we see that it slopes towards the fifty-percent line: when an issue is more salient, a more even balance of Democrats and Republicans engage the issue. For example, on a low-saliency day, Democrats are slightly more likely than Republicans to author a press release about the Iraq, with 65% of low-saliency press releases from Democrats. But on days when the Iraq war was salient, there was almost perfect balance in attention, with Democrats authoring only 51% of issued press releases.⁴

This shows that the parties engage the same topics and engage those topics on the

⁴There is one clear exception: attention to firefighter grants. This is the result of Mike DeWine’s (R-OH) massive attention on fire grants.

same days, when issues are salient. This appears to be the result of two distinct processes. First, grants and appropriations are announced on specific days and both Republicans and Democrats scramble to be the first to announce money going to their state (Shepsle et al. 2009). Second, senators from both parties engage substantive issues when they are salient. Therefore, senators from both parties engage the same issues when they are salient and newsworthy, resulting in the parties allocating similar attention to topics in the aggregate. In the next section, I show that the parties converge on the same topic, but offer different positions when discussing those topics.

7.4 Nonpartisan Home Styles, But Partisan Rhetoric

While home styles are nonpartisan, what senators say in their press releases can be very partisan. This was evident in the Senate's reaction to the proposed troop surge in Iraq. Even though both parties issued press releases about the Iraq war, Democrats were united in their opposition to the war, while Republicans were much more supportive of Bush's proposal. These partisan differences are prevalent throughout the press releases: Grimmer and King (2010) demonstrates that up to 25% of the press releases contain explicit partisan attacks on the opposing party. An even larger percentage of press releases will highlight differences in Republican and Democrat policy proposals.

On its own, the statistical model used to measure home styles is unable to uncover differences between the two parties. But we can combine the output from the model with additional methods to identify differences in how Republicans and Democrats explained their positions on substantive topics. (Monroe, Colaresi and Quinn 2008; Manning et al. 2008). In this section, I employ two different methods to identify partisan differences in language and use these methods to demonstrate that Republicans and Democrats may agree

on what issues to discuss with constituents, but disagree strongly about what to do on those issues.

7.4.1 Two Methods for Identifying Partisan Words

Our inferential goal is to identify words that best characterize the arguments Democrats and Republicans make when discussing the same topic. For intuition, consider the debate about whether to place a deadline on the U.S. involvement in Iraq. Republicans argued against a time line with the Senate minority leader stating that “we know with certainty that a precipitous, hasty withdrawal guarantees a strategic failure in Iraq and across the region” (McConnell 2007). Democrats framed the Iraq war as an already failed endeavor (Feingold 2007):

Since the President refuses to change his failed Iraq policy, that responsibility falls on Congress. By setting a date after which funding for the President’s failed Iraq policy will end, we can give the President the time and funding he needs to safely redeploy our troops so we can refocus on the global terrorist networks that threaten the lives of Americans.

Both statements are about the conduct of the Iraq war and capture the party’s differing positions. Because these arguments are repeated many times, subtle differences in the language Democrats and Republicans use to discuss the same topics. And the largest differences should correspond to words that a party uses to make their point (Monroe, Colaresi and Quinn 2008).

The simplest way to identify partisan words would be a difference in means: comparing the average number of times Democrats use a word when discussing a topic to the average

number of times Republicans use the word when discussing the same topic.⁵ Suppose that the contents of each press release i is given by the $2,796 \times 1$ vector $Y_{i,iraq}$ ($n = 1, \dots, n_{iraq}$). For each word, calculate the difference in usage among Republicans and Democrats

$$\text{Mean Diff}_{w,Iraq} = \bar{Y}_{w,Iraq,Republican} - \bar{Y}_{w,Iraq,Democrat}$$

where,

$$\bar{Y}_{w,Iraq,Republican} = \sum_{i=1}^{n_{iraq,Republican}} \frac{Y_{i,iraq,Republican}}{n_{iraq,Republican}}$$

A large positive difference indicates that a word is used more often by Republicans, whereas a large negative difference is indicative of Democrats using a word more often. Of course, this neglects the variability in how often words are used. A simple solution is to standardize the mean difference,

$$\text{Stand. Mean Diff}_{w,Iraq} = \frac{\text{Mean Diff}_{w,Iraq}}{\text{Stand. Error}(\text{Mean Diff}_{w,Iraq})}$$

If we then square this difference, we have our first measure of partisan words, the *mutual information* between partisanship of an author and incidence of a word,⁶

$$\text{Mutual Information}_{w,Iraq} \propto \left(\text{Stand. Mean Diff}_{w,Iraq} \right)^2$$

⁵Equivalently, regress the number of times a word is used in a press release on an indicator for Democrat or Republican author.

⁶Earlier we developed mutual information from different first principles, but the interpretation remains the same: mutual information measures how much knowledge of a word reduces our uncertainty about classifying Democrats and Republicans. The constant and squaring are unimportant because it does not affect the relative magnitude of the mutual information, which is the actual quantity of interest

To supplement the mutual information measure, I use a log odds ratio, a method for identifying partisan words first suggested in Monroe, Colaresi and Quinn (2008). The log-odds ratio provides a second method to compare the relative frequency Republicans and Democrats use a word.

To construct the log odds ratio for the Iraq war words, we first calculate the relative frequency each word was used in Republican and Democrat press releases about the Iraq war. Let $\text{prop}_{w,\text{Iraq},\text{Dem}}$ represent the proportion of all words that were word w in press releases about the Iraq war, issued by Democrats. Collect this quantity for all words into the vector $\text{prop}_{\text{Iraq},\text{Dem}} = (\text{prop}_{1,\text{Iraq},\text{Dems}}, \dots, \text{prop}_{2796,\text{Iraq},\text{Dems}})$.⁷ Next, we construct the *odds* of a Democrat using word w when talking about Iraq,

$$\text{Odds}_{w,\text{Iraq},\text{Dem}} = \frac{\text{prop}_{w,\text{Iraq},\text{Dem}}}{1 - \text{prop}_{w,\text{Iraq},\text{Dem}}}$$

and we can calculate the analogous odds for Republicans, $\text{Odds}_{w,\text{Iraq},\text{Rep}}$. We then take the ratio of the odds and take the logarithm to produce the log odds ratio,

$$\log \text{Odds}_{w,\text{Iraq}} = \log \text{Odds}_{w,\text{Iraq},\text{Rep}} - \log \text{Odds}_{w,\text{Iraq},\text{Dem}}$$

If the log odds ratio for a word w is positive Republicans used the word relatively more often than Democrats and a negative log odds ratio indicates Democrats used the word w relatively more often.

⁷Alternatively, we can smooth this measurement slightly by adding a small amount, δ to each word $Y'_{w,\text{Iraq}} = Y_{w,\text{Iraq}} + \delta$, which is suggested by Monroe, Colaresi and Quinn (2008). Alternatively, I focus on only the words that occur fairly often in the topic. This is essentially the approach outlined in Monroe, Colaresi and Quinn (2008), who instead use a more complicated Laplace prior to shrink the log-odds ratios.

from the conflict. Republicans are much more likely to cite “freedom” and “democracy” when discussing the Iraq war. This aligns with the neoconservative justifications given for the war: it was an attempt to preserve American *freedom* through preemptive action and to spread *democracy* throughout the middle east. For example, George Allen (R-VA) justified the conflict as a war to stop those who would “terrorize freedom loving people around the world” (Allen 2006) and after the elections in 2005, Mike Enzi (R-WY) congratulated the “[b]rave Iraqi soldiers and civilians risked their lives to participate in their fledgling democracy” (Enzi 2005).

In contrast, Democrats are much more critical of the conduct of the war, criticizing *Republican* leaders for a perceived vague *strategy* in Iraq. For example, Russ Feingold (D-WI) criticized, “the administration’s failure to offer a coherent or effective strategy in Iraq” (Feingold 2006) and argued that a “clear, targeted strategy to strengthen our national security is not an option but a necessity” (Feingold 2005). Figure 7.4 also demonstrates that Democrats were systematically more likely to mention “truth” when discussing the Iraq war. This refers to a growing criticism of the Bush administrations tactics to justify the war to Congress, particularly the failure of the administration to produce any weapons of madd destruction.

The two parties also differed in their proposed solutions to the rise in gas prices that occurred in 2005 and 2006. The right-hand plot in Figure 7.4 presents differences in Democrat and Republican use of language in press releases discussing the cost of gas. When discussing the increase in gas prices, Republicans are much more likely to bring up drilling for oil in the “artic”, and to follow a plan from the Department of “Interior” to allow additional “exploration” to identify “domestic” sources of oil. For example, Kay Bailey-Hutchison (R-TX) argues that America’s own resources represent the solution to the energy crisis:

America is blessed with bountiful reserves of oil and gas in areas such as the Alaskan National Wildlife Refuge (ANWR) and Outer Continental Shelf. As the Washington Post noted, "the nation needs to be as willing to explore off its own shores for the resources it needs as it is to import them from abroad." Under a plan issued by the Department of the Interior, potential production in the Gulf of Mexico, Atlantic Ocean and off the coast of Alaska could equal 20 years worth of what we import from Saudi Arabia or Venezuela.

This sentiment was perhaps best captured by the mantra regularly chanted at the 2008 Republican Convention to "Drill Baby, Drill". To be clear, Democrats explicitly criticized this idea, with statements declaring that "drilling in the Arctic is the wrong choice" (Cantwell 2005), but Republicans were more likely to focus on the case for drilling than Democrats.

Democrats focused much more on the role of oil companies in causing the "skyrocketing" gas prices. Democrats worry that the "companies" are "manipulating" prices to increase "profit", but subsequently hurting the consumer. The solution to the energy crisis according to Democrats is not drilling, but increasing transparency in the markets: "transparency is key to protecting consumers and the price they pay at the pump" (Cantwell 2007).

Comparing the language that Republicans and Democrats use when discussing the same topics reveals that within topics, the two parties offer different arguments about the same topic. While the two parties converge upon the same topics when communicating with constituents, there are systematic differences in the positions offered when the two parties discuss the same issue. This is important, because it demonstrates that the parties are willing to engage in public disagreements and provide contrasting solutions to salient problems.⁸

⁸There is a strong correlation between the words legislators from either party use when discussing the same topic, indicative that the two parties are discussing the same topics in their press releases, but making different arguments when discussing the same topic

7.5 Conclusion

In this chapter, I have demonstrated that Republicans and Democrats focus on the same issues in their home styles. Both parties converge upon the same topics when communicating with constituents and provide similar attention on almost all the topics included in the model. This similarity emerges because members of both parties engage issues when they are salient. Even though the selection of topics is nonpartisan, I have shown that there are important differences in what Democrats and Republicans say when communicating with constituents.

Republicans and Democrats converging on the same topics demonstrates that the predictions of issue ownership theory are a poor fit for Senate home styles. I have argued that there are two important reasons for issue ownership's failure in Senate press releases. First, there are some issues in the Senate that senators from all parties can discuss and expect to increase their vote total: credit claiming about money as the most prominent example. Second, senators recognize the high costs of not discussing an issue at all: the other party will have a free opportunity to persuade the public. Further, senators with ambitions for higher office use major substantive events to establish their credentials, regardless of who owns the issue.

The convergence of Republicans and Democrats and the willingness to publicly disagree have implications for the types of representation provided to constituents: the convergence and disagreement reveal that Republicans and Democrats satisfy necessary conditions for *deliberative representation*. Deliberative representation requires that members of both parties satisfying the reason giving requirement: offering explanations to constituents about decisions in Washington (Gutmann and Thompson 1996). The evidence presented in this chapter suggests that members of both parties satisfy this basic criterion for delibera-

tion. Members engage the same topics and provide explanations of their contrasting views engaging in a minimal form of debate (Gutmann and Thompson 1996).

The evidence in this chapter also suggests that the parties are “responsible” (Committee 1950). By engaging the same topics when they are salient, but offering contrasting views the two parties are providing differing view points on the same issues to constituents. As long as these messages are covered nationally (and the major substantive statements often are), this provides constituents the opportunity to learn how the views of the two parties differ. While a minimal requirement for responsibility, the presence of this information greatly lowers the cost to citizens of acquiring information about the parties’ positions.

Chapter 8

The Value of Words: The Illusion of Influence and The Cultivation of Support in Senate Press Releases

Abstract: This chapter demonstrates that home styles are much more than cheap talk: senators attach value to credit claiming opportunities in their press releases. Bureaucrats recognize this and create credit claiming opportunities to cultivate support for their agency. This dynamic suggests a different type of credit claiming than has been documented in the literature on credit claiming. A large literature examines how members of Congress strategically use federal appropriations to bolster their support among constituents, with two dominant theories explaining how credit claiming opportunities are created. One theory supposes that members of Congress use their institutional power to secure funding during the yearly appropriations process and then publicize their efforts to constituents. A second and complimentary theory argues that credit claiming begins with bureaucrats, who use their discretion over grants to direct funds to key members of Congress. But I demonstrate this explains only a fraction of the total credit senators claim. To explain the other types of credit claiming, I introduce a new theory that explains how legislators can claim credit without actually affecting where federal money is spent and how bureaucrats facilitate this credit claiming without manipulating grant decisions. Regardless of how funds are allocated to a state, members of Congress want to create the *impression* they were pivotal in securing the federal dollars. Strategic bureaucrats facilitate the claims of credit, using discretion over other aspects of the application process to make legislators appear influential. Using the press release data, interviews with agency officials, and additional quantitative evidence, I find substantial evidence supporting this theory of credit claiming.

8.1 Introduction

Given the massive size of the federal budget, it is surprising that senators focus so much attention in press releases on relatively small grants to their states. For example, on December 7, 2005 Richard Shelby (R-AL), who often boasts of the *billions* of dollars he has secured for Alabama, issued a press release announcing that the “Pine Grove Volunteer Fire Department in Baldwin County will receive \$99,748 in federal funds to assist with operations and firefighter safety” (Shelby 2005*b*). Ten other senators, representing both parties and almost the entire ideological spectrum also issued press releases on December 7th to announce similarly sized fire department grants. And all the senators made clear (or conveyed the impression) they deserved substantial credit for the fire departments receiving the grants. Tennessee Republicans Lamar Alexander and Bill Frist issued a joint press release pledging that they “will continue to work together to ensure that fire departments in Tennessee are ready and able to keep our citizens safe” (Frist 2005). New York Democrat Chuck Schumer boasted to his constituents that he “was among the first senators who recognized the need for the federal government to establish a funding program for local governments and fire departments to help defray the rising costs of equipment and fire prevention” (Schumer 2005). The flurry of press releases about fire department grants on December 7th captured a near weekly ritual in press releases. From 2005 to 2007, with the Senate, as a whole, averaging 2.2 press releases about fire department grants, *per day*.

The small grants announced in the press releases appear inconsequential and little more than cheap talk. But I will demonstrate in this chapter that the credit claiming about fire department grants is the result of strategic bureaucrats responding to their Congressional principals, illustrating the value that senators place on the opportunity to credibly discuss seemingly inconsequential appropriations. Senators attach value to credit claiming oppor-

tunities as an effective way to bolster support among constituents. Bureaucrats, motivated by agency self-preservation, recognize the value senators place on these opportunities. To cultivate support among the senators, the bureaucrats strategically manipulate how grants are announced creating credit claiming opportunities for senators. Agency officials view this manipulation as crucial to their agency's survival: bureaucrats are achieving their goals by creating credit claiming opportunities for members of Congress.

In addition to demonstrating that bureaucrats use credit claiming opportunities to be responsive to members of Congress, I also introduce a new theory of how credit claiming opportunities are created, explaining how legislators claim credit for fire department grants and many other federal funds, even though the grants are insulated from both legislative and bureaucratic influence. The theory in this chapter contributes to the literature on how legislators create credit claiming opportunities (Mayhew 1974), where two dominant theories have emerged to explain how legislators create or find credit claiming opportunities. One theory supposes that legislators create opportunities for credit claiming themselves using the yearly appropriations process—either through earmarks, amendments, or markups during committee hearings (Stein and Bickers 1994, 382). After securing the funds, legislators publicize the awards to their constituents (Sellers 1997; Lee 2003; Shepsle et al. 2009). A second theory supposes that credit claiming opportunities begin with strategic bureaucrats, who exploit their discretion over agency funding decisions to target strategically important members of Congress, who subsequently claim credit for the grants to their constituents, but also increase their support for the agency (Arnold 1979).

Through a comprehensive analysis of *what* legislators claim credit for, I show that neither theory can explain a large portion of the federal funds legislators discuss in their press releases. A large fraction of funds discussed are allocated through federal programs in-

sulated from bureaucratic and Congressional influence. And a growing number of grant programs are allocated on a competitive basis. For example, FEMA's grant program directorate is responsible for the administration of \$10.6 billion in grants, all of which are administered on a competitive basis. For comparison, this represents the total money distributed in earmarks across *all* appropriations bills.

The theory I introduce explains how legislators can claim credit for the grants allocated through a competitive program: once funds from an agency are allocated, instrumental legislators can create the *impression* they wielded significant influence when securing the funds. Recognizing that claiming credit for grants is important to legislators, bureaucrats use their discretion over other aspects of the application process to create the opportunity for legislators to claim credit for the grants. This allows bureaucrats to appear responsive to their Congressional principals.

Using the Assistance to Firefighters Grant Program as a case, I find substantial empirical support for the new theory. Interviews with agency officials indicate that they are unable to affect how the grants are allocated, but they do have substantial discretion over how the grants are announced. Bureaucrats use this discretion to allow Congressional offices to announce the grants prior to the official agency announcement. I then demonstrate, using several quantitative tests, that legislators seize the opportunity provided by bureaucrats and issue press releases about fire department grants prior to the agency. Therefore, press releases from members of Congress are directly attributable to the actions of agency officials. The result is the creation of an *impression* that members of Congress influenced the grant award, when such influence was actually impossible.

The theory of credit claiming offered in this chapter has broader implications for the study of pork and legislative outcomes, in addition to understandings of legislators home

styles. The theory provides a partial explanation for the inconsistent link between new federal funding in a state and electoral security. The relationship is likely to be tenuous because legislators are not always able to affect where grants are allocated and might face difficulty in claiming credit for some funds once distributed. The theory also suggests that more care should be exercised when scholars attempt to identify the causal effect of particular legislators on federal appropriations, because the causal effect in some instances, conditional on the program existing, is identically zero (Levitt and Snyder 1995). This chapter also demonstrates how legislators' home styles are part of a broader and coherent representational style that influences how other actors behave in Washington. Bureaucrats are attentive to specific kinds of home styles—those focused on appropriations—and create opportunities for senators to claim credit for funds in their press releases. Home styles are not only how senators explain their work to constituents in the district, but matters for interactions in Washington.

This chapter provides the first systematic evidence of how bureaucrats manipulate grant announcements to benefit members of Congress. Several studies of Congressional bureaucratic interaction note how bureaucrats “funnel” grant announcements to Congressional office (Arnold 1979), other studies describe how announcements are altered in presidential administrations (Tolchin and Tolchin 1971), and still other studies discuss how legislators fight (or cooperate) to announce new money to their state (Shepsle et al. 2009; Chen 2010). Even textbook accounts of American politics assert that “bureaucrats make sure members of Congress take credit when local projects or grants are announced” (Kernell, Jacobson and Kousser 2010, 391). While this phenomenon is well documented there is little systematic evidence that bureaucrats manipulate agency decisions to be responsive to senators. In fact, our knowledge of how this manipulation occurs is limited to anecdotes, interviews,

and personal experiences in Congress. The systematic evidence that I present in this chapter demonstrates that grant funneling regularly occurs, but also identifies who takes advantage of the opportunities bureaucrats create, as well as identifying the specific way bureaucrats create the credit claiming opportunities.

8.2 Claiming Credit When No Credit is Due

According to Mayhew (1974), credit claiming occurs when legislators act, “so as to *generate a belief* in a relevant political actor (or actors) that one is personally responsible for causing the government, or some unit thereof, to do something that the actor (or actors) considers desirable” (emphasis added) (Mayhew 1974, 54). As Mayhew (1974) makes clear in his definition, there is no reason for legislators to *actually* do anything to claim credit. Rather, legislators need only be able to instill the *belief* that they caused the federal government to perform some particular action. Mayhew (1974) goes on to argue that particularized benefits are the easiest to claim credit for, because they are targeted to specific constituencies, easily creating the “*impression...that a congressman is getting ‘his share’ of whatever it is the government is offering*” (Mayhew 1974, 54) (emphasis added) and provides examples of how legislators use their position in the institution to generate credit claiming opportunities.

Most of the literature on credit claiming follows Mayhew’s (1974) focus on particularized benefits, with opportunities for credit claiming created by members of Congress during the appropriations process (Fiorina 1977; Stein and Bickers 1994; Shepsle et al. 2009). Rather than focus on how legislators might create the impression of influencing federal appropriations, this literature assumes that there is a one-to-one correspondence between the funds that legislators *actually* obtain for their district and the funds legislators

claim to have obtained. Stein and Bickers (1994) argue that a necessary condition for funds to affect support for a legislators is that “legislators can influence the distribution of program benefits to their district” (Stein and Bickers 1994, 382). This assumption is then used to allow researchers to equate new federal dollars in a district with new federal dollars in a district attributed to a particular senator (Stein and Bickers 1994; Levitt and Snyder 1995; Lee 2003).¹

A second literature also assumes that credit claiming opportunities are created when funding decisions are manipulated, but recognizes that bureaucrats also control where federal money is spent. Outside of earmarks in spending bills, legislation rarely details exactly how to spend money for a program, leaving decisions about where to direct federal money to bureaucrats (Arnold 1979). Strategic agency officials can exploit this discretion to achieve their goal of sustaining their agency and increasing its budget, by directing grants and other spending to the districts of legislators’ key to determining agency funding levels (Hird 1991). Legislators then claim credit for the funds obtained by the bureaucrats.

Both theories assume that for credit claiming to occur, either bureaucrats or legislators must manipulate federal funding to target a particular district. But, numerous programs are designed to be insulated from legislative or bureaucratic manipulation. Some programs, like the Assistance to Firefighter Grant Program (AFGP) (discussed by the senators in the introduction) use a transparent and competitive grant application process to administer the grant program. Other programs, like the Justice Assistance Grant Program (JAGP), administer funds based on a nationwide formula. Once the formula is determined in the appropriations bill, legislators have no influence over how the money is distributed.

Despite the lack of influence, legislators—with the help of bureaucrats—are still able

¹Even theories that suppose legislators are able to free ride on the work of their colleagues supposes that *some* federal money has been allocated by groups of individuals or by political parties (Levitt and Snyder 1995; Shepsle et al. 2009).

to claim credit for the funds. The key to this credit claiming, as first suggested in Mayhew (1974), is that legislators create the *impression* they influenced the allocation of the grant, generating the *belief* they caused the grant to be allocated. Once constituents believe that a legislator is responsible for a particular grant, most theories agree that the grant allocated by a competitive process is just as effective at increasing constituency support as funds a legislator actually directed to their district (Stein and Bickers 1994).

Announcing a grant for a state is the most important step in creating the impression legislators were responsible for securing the funding. Senators use an identical template for announcing grants and to announce funds secured through earmarks or appropriations, making it easier to conflate appropriations and grants. For example, this headline from Richard Shelby, “Shelby Announces Financial Services Funding for West Alabama” describes funds secured through the appropriations process (Shelby 2007a) and “Shelby Announces Over \$109,000 for Falkville Volunteer Fire Department” announces a fire department grant (Shelby 2007b). The result is that it is hard to distinguish money the senator secured through appropriations and grants the senator is merely announcing. Further, political psychology research suggests that a senator can bolster support just by associating herself with a popular program, even if constituents are unsure if their legislator helped secure the grant (Lodge, Steenbergen and Brau 1995).

The complicated appropriations process makes identifying the source of grants difficult, which helps legislators to create the appearance of influence. Legislators complicate this further, including irrelevant facts in their press releases. This is done to make the credit claim more plausible they were responsible for securing the grant. For example, senators often suggest that their seat on a committee was important for securing a grant. When Ben Cardin (D-MD) announces fire department grants he reminds constituents that he “is on

the Budget Committee”, even though the Budget committee has no role in appropriating or oversight of the program that administers the fire department grants (Cardin 2007). Richard Shelby begins his grant announcements by describing himself as, “a senior member of the Appropriations committee” (Shelby 2005a) and both Barbara Mikulski (D-MD) and Arlen Specter (R-PA) point out their position on the Homeland security appropriations subcommittee (Specter 2007; Mikulski 2007a).

Announcing grants is also important because it affords senators the opportunity to shape the coverage of the grant in local newspapers. Budget constrained local media are unable and often unwilling to independently report on grant disbursements to the state. The result is that newspapers and local media rely upon Senate offices to cover the complicated appropriations process (see Chapter 3 and Cook 1989). Senators take advantage of this dependence, essentially writing the stories about the grant for the local paper. And when senators write a story for the local paper, the senators offer the strong suggestion that they had an important role in securing the grant. For example, a story about a local fire department receiving a grant in the *Cherokee County Herald* (a local paper in Alabama) begins, “U.S. Sen Richard Shelby (R-AL) has announced that the Spring Creek Volunteer Fire Department will receive \$36,000 in federal funds” (Staff 2004). Likewise the Connecticut *Town Times* ran a story titled “Senators announce fire department grant”, with the opening sentence, “The Watertown Fire Department is among five Connecticut departments that will receive federal grants from the U.S. Department of Homeland Security (DHS), said Sens. *Chris Dodd* and *Joe Lieberman*” (Staff 2005) (emphasis added).²

Agency officials at programs that oversee competitive grant programs share the same

²For obvious reasons, during conversations with Senate staff no press secretary was willing to suggest that they were intentionally deceiving constituents. But, one press secretary for a senator who regularly announced fire departments did state that the office, “treats grant announcements and earmarks the same” (Personal Interview).

goals as other bureaucrats. They want to perpetuate their program and increase their budget, but are disadvantaged relative to programs where bureaucrats can exercise discretion over how funds are distributed (Personal Interview, Arnold 1979, Wildavsky 1984). Bureaucrats recognize that senators value the opportunity to announce grants and create opportunities for senators to do so. Bureaucrats at competitive programs can compensate by ensuring that legislators are able to claim full credit for grants the program distributes. In an interview, one official described her ultimate goal after funding decisions are made is to make “sure that legislators remember that this program is valuable *to them* [members of Congress] during authorization votes” (Personal Interview). To accomplish this, agency officials use their discretion over other parts of the appropriations process to ensure that legislators receive full credit for a grant. For example, in the case below we describe one program where bureaucrats only have discretion over how the funding awards are announced. I show that agency officials use this discretion to make sure that Congressional offices are able to announce grants *before* the agency. After grant decisions are made, agency officials funnel the information to Congressional offices, along with information to facilitate writing a press release. This guarantees that Congressional offices are the primary source for grant announcements.

Therefore, legislators are able to claim credit for grants they had no role in securing. The key is that legislators create the *impression* they were able to secure the funds. Strategic bureaucrats assist legislators in creating this impression, providing members of Congress the opportunity to announce grant decisions prior to the agency. I now demonstrate that a large portion of the credit actually claimed for particularistic benefits in press releases is from grant programs, rather than from funding secured through the standard appropriations process, suggesting that the new theory is necessary to explain a large proportion of the

credit legislators claim. Then, using the Assistance to Firefighters Grant Program as a case, we demonstrate how agency officials ensure legislators are able to claim credit for grants distributed on a competitive basis.

8.3 The Abundance of Credit Claiming About Grants

Much of the literature on how legislators use federal funds to bolster electoral security assumes that the primary (if only) way legislators can claim for federal funds is through the inclusion of projects in a standard appropriations bill. In this section, I show that this overlooks a substantial proportion of the credit legislators claim. An analysis of *what* legislators discuss when they claim credit for appropriations reveals that a substantial proportion of these press releases discuss grants allocated outside of the standard appropriations process. In fact, legislators are almost as likely to claim credit for grants as they are to claim credit for funds obtained through the standard appropriations process.

To systematically measure what kinds of funds legislators claim, I employ a supervised learning method. Supervised learning methods require the categories to be defined beforehand and use a *training set* of manually labeled documents to infer the prevalence of press releases in the population of documents (Hopkins and King 2009). To create the training set, I sampled 500 press releases from the collection of press releases. I then classified the press releases into three categories: credit claiming about grants, credit claiming about funds secured through the appropriations process, and other topics.³

The results are displayed in Figure 8.1 and demonstrate the prevalence of grant announcements in senators press releases. On the horizontal axis are the total number of

³I only labeled a press release as credit claiming about grants if the press release explicitly stated that the money came from a grant program. Therefore, the measures represent a lower bound on the proportion of press releases that claim credit for grants.

press releases from a senator that claim credit for federal funds (obtained by multiplying the estimated proportion of press releases that claim credit by the total number of press releases from a senator). The vertical axis plots the number of press releases where credit is claimed about grants, less the number of press releases where credit is claimed for funds secured during the appropriations process. If senators are located at the bottom of the figure, they discuss appropriations funds more often and if they are located towards the top, they discuss grants more often in their press releases.

Figure 8.1 shows that senators regularly credit claim about grants. In fact, about 41% of all credit claiming is about grants, representing approximately 11.2% of all press releases issued from 2005-2007. Legislators who regularly secure funding for their constituents during the appropriations process are also likely to claim credit for grants. For example, in 2006 Richard Shelby issued about 280 press releases to claim credit for grants, compared to only about 29 press releases claiming credit for funding secured the through appropriations process. Tom Harkin (D-IA), also a member of the appropriations committee, also focused extensively on grants when claiming credit for funds. Of course, the theory advanced in this chapter does not preclude senators from credit claiming about funds secured through the standard appropriations process. Both Chuck Schumer (D-NY) and Hillary Clinton (D-NY) allocated much more attention to funds secured during the appropriations process than grants (although they both issued several press releases announcing grants to their state). This should be expected: Clinton and Schumer were the top two earmarkers in Congress during this period, ensuring an abundance of self-created opportunities to claim credit.

Figure 8.1 presents a major challenge to existing theories of how credit claiming opportunities are created and demonstrates the need for the new theory I developed in the previous section. In the next section, I show that the theory I advanced describes how sen-

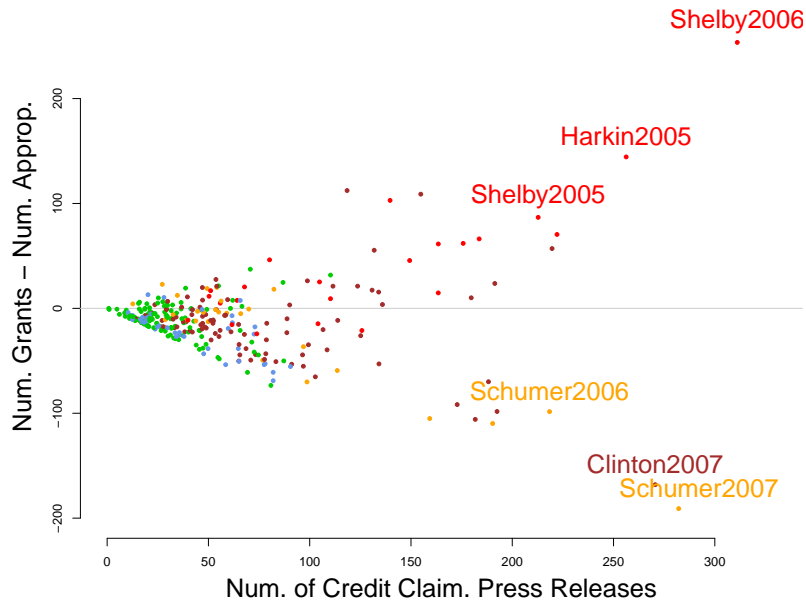


Figure 8.1: Senators Regularly Credit Claim for Grants

This figure shows that legislators regularly credit claim about both grants and funds secured through the appropriations process. The horizontal axis is the total number of press releases where senators claimed credit for an appropriation. The vertical axis represents the difference between the number of press releases claiming credit for grants and press releases claiming credit for funds secured during the appropriation process. This shows that legislators regularly claim credit for grants, even legislators who are known for their large appropriations to their home state.

ators claim credit for grants from the Assistance to Firefighter Grant Program: the grant program is competitive, but strategic bureaucrats create credit claiming opportunities for legislators, who use the opportunity to claim credit for the grants.

8.4 The Assistance to Firefighter Grant Program

The Assistance to Firefighters Grant Program (AFGP) is a large, competitive grant program administered by the Department of Homeland Security. Created through an appropriation in the fiscal year 2001 National Defense Authorization Act and reauthorized during the fiscal year 2005 appropriation process, the AFGP has distributed billions of dollars to fire departments. The money is allocated for the purchase of the equipment and the creation of wellness and fitness programs. Each year tens of thousands of fire departments from across the country, with a small percentage (about 13%) actually receiving awards (Kruger 2009).

In this section, I use the AFGP to demonstrate how credit is claimed when there is no credit due. I show that neither legislators nor agency officials are able to exercise direct influence over how grants are allocated in the AFGP. Using both qualitative and quantitative evidence, I show that, as my theory predicts, bureaucrats create legislators' credit claiming about the fire department grants by allowing Congressional offices to announce the grants before the agency. As a result, legislators are able to claim credit for grants that neither they nor bureaucrats influenced.

8.4.1 The Grant Application Process: No Congressional Influence or Bureaucratic Meddling

The statute that authorizes the AFGP mandates that the program allocate “grants on a competitive basis directly to fire departments of a State” (15 U.S.C. 2229 (b)(1)(A)). Figure 8.2 describes how the grant program was implemented, as detailed in the *Code of Federal Regulations* (44 CFR Part 152) and as described in interviews. In this section, I describe each step in the application process and describe why it is insulated from outside influence.

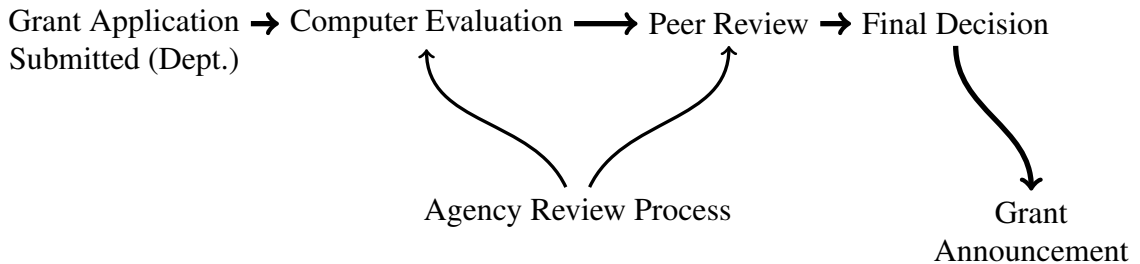


Figure 8.2: The Assistance to Firefight Grant Application Process

Fire departments initiate the application process by submitting an extensive application to the grant program. There are two possibilities for Congressional influence at this stage: members of Congress could use their staff to assist local fire departments in the preparation of an application or a legislator may send a letter of support with an application. Senators do publicize the program, attempting to increase the number of applications from their state, but agency officials said they were unaware of any Congressional offices helping departments prepare applications. One official described this lack of assistance from Congressional offices as the result of a grant application that is, “very specific and technical and Congressional staff wouldn’t be much help” (Personal Interview). He also cited the need to create a “departmental narrative” about the funding and how it would be used as an obstacle to congressional assistance (Personal Interview). A different official explained that “letters from senators are sent to the central agency office in Washington, applications are sent to the regional offices for evaluation” (Personal Interview). Applications are evaluated at a set of regional centers, but the program’s director and other top officials are stationed in Washington. Therefore, the officials who will make the final decision about grants will never see letters of support from members of Congress.

Once grants arrive at one of the regional evaluation centers, they are subjected to an ini-

tial screening that is insulated from Congressional influence (Personal Interview, 44 CFR Part 152.5). The applications are evaluated using an automated (computerized) routine, that scores the applications according to a predetermined (and publicized) criteria (44 CFR Part 152.5 (a), Personal Interview). Selection of applications follows a strict point system, with applications given a high enough score allowed to progress to the next round. The score from the initial screening algorithm cannot be modified—the score is final—and therefore bureaucrats are unable to exert discretion at this stage in the process.

After the first evaluation stage a second evaluation occurs by hand to identify the grants that will be awarded funding. After applications pass through the initial screening stage, a team of “non-Federal experts with a fire service background” (44 CFR Part 152.5 (b)) evaluate the applications. One agency official described the panel as “fire chiefs from around the [geographic] region” who score the applications after a brief training session (Personal Interview). The score from this panel cannot be altered and is the factor used to decide who receives applications.

The final step in the application process is the selection of departments to receive grants. Once again, agency influence is severely limited. In the Code of Federal Regulations, the agency states that, “we will fund the highest scored applications before considering lower scored application”: departments are ordered according to their score and this is used to disburse the grants (44 CFR Part 152.6 (b)). According to agency policy, officials are *technically* allowed some discretion at the final stage of this evaluation procedure (44 CFR Part 152.6 (c)). But this discretion is extremely limited, and can only be used to ensure that the applications satisfy the geographic distribution requirements from the enacting statute. One agency official told me that, “we haven’t used these geographic considerations in our decisions and follow the panel scores” (Personal Interview).

Therefore, the application process—from submission to final decision—is insulated by legislative influence and leaves agency officials no discretion over where grants are allocated. I now describe how agency officials facilitate credit claiming opportunities among members of Congress.

8.4.2 Legislators Announce Grants Before The Agency

After the award recipients are selected, agency officials need to inform the departments of their successful applications, an opportunity officials use to bolster support for their program. While seemingly an inconsequential formality, this is the first step in the application process where agency officials have complete discretion. In interviews, several officials noted that this was the only step where they would be able to effectively increase support for their program among members of Congress. And officials have strong incentives to defend their program. In addition to defending their job, the agency officials who I interviewed were former fire chiefs, all of whom believed they were performing an important service with the grants. They also know their program is not universally supported, giving the bureaucrats reason to worry. The Bush administration proposed cutting the agency's budget 46% in the fiscal year 2009 budget and conservative think tanks have criticized the program as wasteful and ineffective (Muhlhausen 2009).

To create the credit claiming opportunities, agency officials send the award decisions to members of Congress, who are encouraged to make the award announcement before the agency. One agency official indicated that, “we give the information about the grant awards to Congressional offices two or three days before the agency makes the announcement” (Personal Interview). A second agency official indicated that, “we give legislators the opportunity to announce grants before the agency” (Personal Interview). The officials

view this as an important step to protecting their program by making sure legislators remember the program is valuable during authorization votes.

Therefore, agency officials inform Congressional offices about grant awards prior to the agency announcement, creating a credit claiming opportunity for legislators. I now demonstrate that legislators use this opportunity to claim credit for the fire department grants. To demonstrate that legislators announce grants before the AFGP, I compiled a data set of the number of grant awards the AFGP announced each day and combined this information with the daily number of press releases announcing fire department grants. (I identified these press releases using the output of the statistical model introduced in Chapter 4).⁴ For a graphical demonstration, the top plot in Figure 8.3 presents the number of press releases about fire department grants issued on each day (black lines) and the number of announcements about fire department grants from the AFGP (red lines), for each day from 2005-2007. This figure clearly indicates that senators' press releases about grants precedes agency announcements, with spikes in the number of press releases from senators reaching a local maximum two days prior to the agency announcing grants. To more clearly display this pattern, the bottom two plots in Figure 8.3 focus on two different six-month periods: January to July, 2005 and July to December, 2007. These plots illustrate how Congressional announcements precede agency announcements: an increase in the number of press releases about fire department grants about two days prior to the agency officially announces grants to localities.

To more formally test the pattern displayed in Figure 8.3, I employ a *Granger Causality* test to show that senators press releases precede grant announcements and that grant

⁴The AFGP provides very thorough and publicly available release information. I compiled these dates to create one database of releases, including location of grants and release dates. The data set will be made publicly available upon publication. A press release is considered about fire department grants if the *maximum a posteriori* category for the press release is the fire department category.

Chapter 8. The Value of Words: The Illusion of Influence and The Cultivation of Support in Senate Press Releases

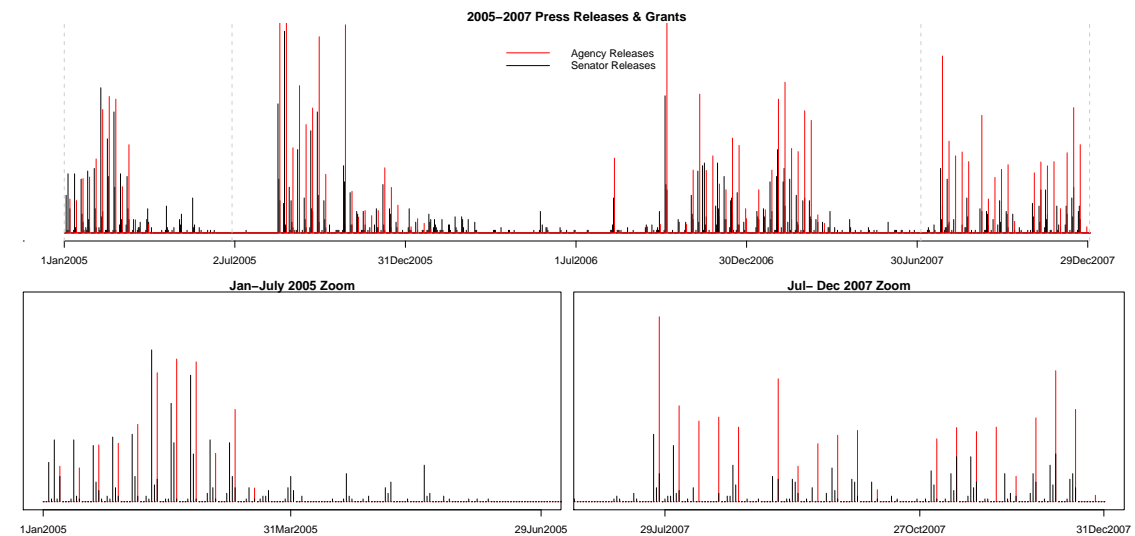


Figure 8.3: Press Releases are Issued Before Grant Announcements

This figure shows that members of Congress announce grant awards before the agency, which agency officials described as the method they used to facilitate Congressional credit claiming. The number of press releases from senators about fire department grants (black lines) clearly rise two days prior to the number of press releases from the AFGP (red lines). The bottom two plots highlight two six-month periods—January to July 2005 and July to December 2007—demonstrating more clearly that legislators grant announcements precede the agency’s announcements.

announcements do not precede press releases. Heuristically, a Granger Causality test determines if one time series, such as the number of press releases on a day, provides information about a second time series, such as the number of grant announcements by the agency on a day, beyond the information already contained in the second time series (Enders 1995). If legislators are using the opportunity created by agency officials to announce fire department grants, then senators’ press releases should predict the grant announcement by the AFGP, beyond the information already contained in the grant announcements time series.⁵ More formally, we first build a model using lagged values of one time series to predict itself. For this particular test, I used the number of releases on the five previous days in

⁵I use Granger causality here because it is the appropriate test of predictability, not as a definition of causality. For reasons why Granger causality fails as a model for causal inference, see Holland (1986).

this base model. We then test if adding additional information from a different time series provides additional predictive power, with the null hypothesis that the second time series has no predictive power. Rejecting this null provides evidence that the second time series provides evidence for predicting the first.

Table 8.1 carries out the test and provides evidence that members of Congress are claiming credit for grants prior to the official agency announcement. The left-hand column carries out a test to determine if press releases help predict grant announcements, with the amount of information about press releases included in the model increasing as we move down the column (more lagged press release days are included).⁶ For each model, the null—that press releases do not provide additional predictive power—is rejected at high levels of confidence: senators are announcing grants before the agency, corroborating the observation made in Figure 8.3. In contrast, the right-hand side of Table 8.1 shows that grants do not provide the same predictive power for press releases. This is evidence that legislators are seizing the opportunity provided by AFGP officials to make announcements.

Table 8.1: Press Releases Predict Grant Announcements

Predict Agency w/ Senator		Predict Senator w/ Agency	
Lag Length (Press Releases)	P-Value	Lag Length (Agency Announce.)	P-Value
1 Day	$< 10^{-12}$	1 Day	0.72
2 Days	$< 10^{-16}$	2 Days	0.32
3 Days	$< 10^{-16}$	3 Days	0.09
4 Days	$< 10^{-16}$	4 Days	0.071

Table 8.1 demonstrates that legislators announcements of press releases precedes the AFGP announcements—a strong indication that legislators are using the opportunity provided by the AFGP officials to claim credit for the grants. I now demonstrate that a ma-

⁶For the baseline model in both tables, I included the predicted time series lags up to the 5 previous day.

majority of press releases from appropriations focused senators are issued in the three days prior to agency grant announcements, further evidence that AFGP officials are creating the credit claiming opportunity for members of Congress. Because agency officials announce new grant awards weekly, we can categorize press releases into three categories: press releases three days prior to an agency announcement, press releases issued three days after an agency announcement, and press releases issued on the same day as the agency. Overall, 72% of press releases about fire departments are issued in the three days prior to an agency announcement (even though these only constitute about 37 % of all days).

Figure 8.4 presents a ternary plot that describes the proportion of press releases from senators that are issued three days prior to the agency (left-hand corner), the same day as the agency (top-corner), and three days after the agency (right-hand corner). The points are proportional to the share of all press releases on fire department grants that were issued by that senator. The closer points are to a corner, the greater the proportion of press releases from a senator that fall into a particular category. This figure clearly shows that appropriations focused senators issued a substantial proportion of their press releases three days prior to the agency, with the bulk of points located near the left-hand edge of the plot. Further, senators who regularly announce fire department grants were much more likely to issue their press releases in the three days immediately prior to an agency announcement. In fact, the senator who issued the most press releases about fire department grants, Mike DeWine (R-OH) issued almost all of his press releases in the three days prior to an agency announcement. The close relationship between the agency and DeWine should be expected: DeWine was one of the two authors of the legislation that created the AFGP (along with Chris Dodd (D-CT), who also announces fire department grants before the agency) and DeWine held a seat on the appropriations committee.

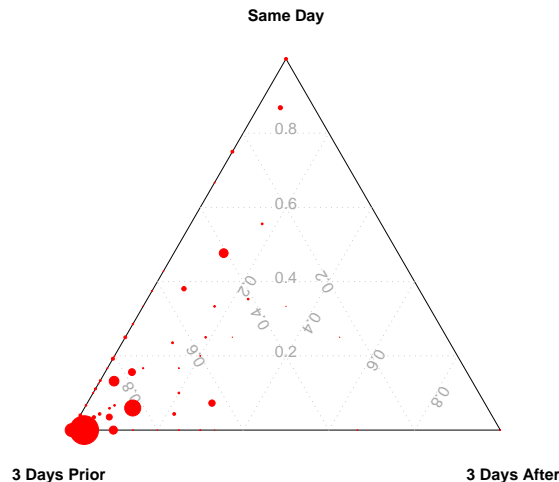


Figure 8.4: Most Press Releases Are Issued Prior to the Agency

This figure shows that most legislators' press releases about fire department grants are issued in the three days prior to an agency announcement. To demonstrate this, I use a ternary plot to present the proportion of a senator's press releases issued three days prior to the agency, on the same day as the agency, and three days after. The points are sized so that senators who issued more press releases have larger points. This figure shows that a majority of senators issued their press releases prior to the agency and that senators who issued a large number of press releases about fire departments were much more likely to make the announcements before the agency.

As a final validation that members of Congress are announcing press releases immediately prior to the AFGP, I manually read a sample of press releases to ensure that the press releases actually announced grants that the agency had yet to announce, but would announce shortly after the press release. To perform the validation, I sampled 50 fire department press releases issued in the three days prior to an agency announcement. I read each press release, identifying the grants discussed in the press release, including the fire department awarded the grant and the dollar amount. Using the public grant distribution information from the AFGP program, I validated that the grant discussed in the press release was in fact announced one to three days later. Among the sampled press releases, 95.2 %

of the grants in the press releases were announced one to three days prior to the AFGP announcement. The other 4.8 % announced grants were announced by senators after the official AFGP announcement.⁷ This provides strong evidence for the validity of the lagged press releases announcing the future grants.

Far from an isolated case, it appears that the way AFGP officials create credit claiming opportunities for senators is common. Interviews with local officials suggest that there are numerous programs that are similar to the AFGP that also ensure legislators announce grants before the agency. One midwestern police chief described how his member of Congress “issued a press release every time we used a grant to get bullet proof vests for our department. We were surprised: the funding was guaranteed and we didn’t use his office to get the grant” (Personal Interview). Likewise, universities often compete for significant grants from the federal government—such as the Research and Innovative Technology Administration (RITA) grants—and the grants are regularly announced by members of Congress (Mikulski 2007*b*). And sometimes, it seems that senators announce agency decisions *too early*. Richard Shelby announced a major shipping contract for Alabama, but neither the Navy nor the company that secured the contract could comment, because of agency regulations (Wilkinson 2008).

In this section, I described how bureaucrats use the little discretion they are afforded in the AFGP to create credit claiming opportunities for legislators. Bureaucrats use their discretion over grant announcements to allow legislators to announce the grant before the AFGP. Using interview and quantitative evidence, I present several pieces evidence that legislators seize the opportunity created by bureaucrats, announcing grants before the agency: press releases are issued before grant announcements, a large proportion of press releases

⁷This validation provides further evidence of the validity of this category as discussing fire department grants, as 100% of the sampled press releases discussed grants allocated to fire departments.

are issued in the three days prior to an agency announcement, and a manual validation shows that press releases that are issued prior to an AFGP announcement contain grants that the agency had yet to officially announce. Taken together, this suggests that legislators are claiming credit for the fire department grants because of the bureaucrats' efforts.

8.5 Conclusion

In this chapter, I demonstrated one way that home styles are not cheap talk: both bureaucrats and legislators attach significant value to the content of press releases. Senators value the opportunity to announce grants given to their state. Bureaucrats at competitive grant programs recognize this and create credit claiming opportunities for members of Congress. This allows agency officials to be responsive to members of Congress without manipulating their agency's decisions. Agency officials indicated that creating these opportunities is one of their most important tools for protecting their program from cuts proposed by both the Bush and Obama administration.

The dynamic outlined in this chapter provides a new theory to explain the origins of credit claiming opportunities. A systematic demonstration of *what* legislators claim credit for in press releases reveals that existing theories of how credit claiming opportunities are created are unable to explain a substantial proportion of credit claimed because legislators nor bureaucrats are able to influence the grant allocation. I introduce a new theory, explaining that legislators and bureaucrats work together to create the *impression* members of Congress affected a grant decision, creating a credit claiming opportunity for members of Congress. Using the Assistance to Firefighters Grant Program as a case, I demonstrate that bureaucrats allow members of Congress to announce grants two to three days prior to the agency, creating a credit claiming opportunity for legislators. I use a new data set of

grant announcements, supplemented with press releases to demonstrate that members of Congress seize this opportunity: senators claim credit for grants because the AFGP officials created the opportunity.

This chapter demonstrates an important connection between legislators' *home styles* and *Washington styles*. When legislators present their work to constituents, they know that claiming credit for federal funds is an important way to increase constituent support (Fiorina 1977). This leads legislators to create home styles that focuses on their ability to deliver federal funds to their state. Bureaucrats recognize the demand for credit claiming opportunities and, I demonstrate, create opportunities for members of Congress to claim full credit for their agency's grants. Therefore, we see that legislators' home styles are affecting how agency officials interact with Congress. If bureaucrats are successful at increasing support among members of Congress, then senators' desire to adopt pork oriented home styles affects the kinds of programs that persist in the federal government. And there is suggestive evidence that the agency officials are successful. After the Bush administration proposed substantially slashing the AFGP budget, funding was restored by a coalition of senators who regularly claim credit for fire department grants (Kruger 2009).

8.5.1 Future Research

My theory suggests several different questions for further research. Funding decisions are unlikely to be completely insulated from bureaucratic influence and other programs might be structured to allow agency discretion at different stages in the application process. An interesting expansion of the empirical test of this chapter would analyze how bureaucrats utilize the discretion they are offered over different aspects of the grant process to create credit claiming opportunities for members of Congress.

Assessing how (and whether) representatives are able to convince constituents that their member of Congress is responsible for securing a grant is an important question. This would require a carefully designed experiment to infer whether constituents casually reading a newspaper would attribute the grant to the legislator or recognize that the legislator is merely announcing the award. While not a formal demonstration of legislators' ability to convince constituents of their influence over grants, an example from an editorial published in a local newspaper suggests that legislators might be able to create the impression of influence. One liberal Alabama newspaper criticized Shelby for opposing the proposed stimulus in 2009, while simultaneously securing "pork barrel projects" for his constituents. To make the point, the author cited Shelby's press releases arguing that "Most of the press releases are announcements of funds procured for projects in the state of Alabama including money for fire departments, airports and medical research"(Harper 2009). The article goes on to tally the press release, arguing that "Shelby appropriated over \$14 million for programs in Alabama" (Harper 2009), clearly conflating money secured through appropriations and money announced by Shelby in press releases. The confusion of a political reporter about federal grants suggests that constituents are likely to reach a similar conclusion.

8.5.2 Implications for Studying Credit Claiming

The theory of credit claiming advanced in this chapter also has implications for how scholars study the outlay of federal appropriations and the effect of those appropriations on electoral security. A large literature has sought to identify the effect of members of Congress on directing funds to their district, often using data collected from the Federal Assistance Award Data System (FAADS) database (Stein and Bickers 1994; Levitt and Snyder 1995; Sellers 1997; Berry, Burden and Howell 2009). The usual method for determining the *ef-*

fect of legislative actors on the outlay of appropriations is to regress federal outlays on an indicator for the legislator or group of legislators (like committee leaders or members of a particular party). The theory developed in this chapter (and the analysis conducted in Section 8.4.2) shows a more subtle method is necessary to assess the effect of legislators on federal outlays, because legislators are likely to have no effect on some federal outlays. This introduces severe bias into estimates of the causal effect of specific actors on the federal appropriations process.

A second literature examines the effect of the federal outlays on members of Congress' electoral support (Stein and Bickers 1994; Levitt and Snyder 1995). But, legislators are likely to have differential ability to claim credit for some grants (and different propensity to claim credit for funds directed towards a state or district). As a result, equating the federal outlays in a district with the funding constituents attribute to their legislator is likely to result in very biased estimates of the effect of federal appropriations on electoral support. Focus should turn to the steps after the money is allocated, to better understand how members of Congress connect themselves to the federal appropriations and how effective they are at convincing constituents they are responsible for the grants.

Chapter 9

Connecting Votes and Communication: Home Style Appropriators are Roll Call Appropriators

Abstract: In the previous chapters, I have argued that home styles are a fundamental component of representational style. As a result, measuring home styles are central to describing how legislators represent their constituents in Washington. But a key condition for home style to be more than cheap talk has yet to be tested: home styles should also reflect what members of Congress are doing in Washington. The correspondence between legislators words and actions would indicate that home styles are part of a broader and coherent strategy of representation. In this chapter, I show that legislators' statements are systematically related to what legislators do in Washington. Home styles predict a set of important and controversial roll call votes in the Senate. These votes are interesting both for their policy implications and because they are poorly predicted using ideal point estimates. I demonstrate that senators who are appropriators in their home styles are also appropriators when casting votes on the Senate floor, with home style appropriators systematically more likely to oppose reform of the appropriations process. And this relationship remains even after conditioning upon ideal point estimates.

9.1 Introduction

While Congressional speech is often modeled as cheap talk (Austen-Smith 1990), I have argued that senators' statements are from cheap. Instead, how legislators communicate with constituents is an important part of representation and an important indicator of senators' broader representational style. The previous chapters have shown that legislators carefully consider what to say to constituents and attach value to discussing certain topics. Another implication of home styles being more than cheap talk is that they should be credible: there should be a correspondence between what representatives say in their press releases and what they do in Washington. This would indicate that home styles are part of a broader and coherent *style* (or strategy) that captures how members of Congress represent their constituents in the institution. And constituents could use senators' home styles to infer the type of representation they are receiving in Congress.

To show this correspondence between words and actions, I demonstrate that home styles predict senators' votes on a set of controversial roll call votes. Roll call votes are a particularly difficult legislative activity to demonstrate a correspondence with home styles. Legislators' voting behavior is usually described by unidimensional ideal points, with the single dimension able to predict an extremely high percentage of out-of-sample votes (Poole and Rosenthal 1997; Clinton, Jackman and Rivers 2004). In fact, scholars have gone so far as to declare that Congress is "unidimensional", with the single dimension capturing where legislators are located on a simple left-right ideological spectrum. The success rate of predictions using this spectrum is impressive: the single dimension can capture up to 92% of the variation in roll call votes (Poole and Rosenthal 1997). There seems to be little room for predictive power from other measures of legislators' behavior.

In spite of the impressive explained variation there are important dimensions of conflict

beyond those identified using unidimensional ideal points. Each year during the budget process amendments are offered to reform how appropriations are allocated. Some of these amendments are prominent, like the amendment from Jim Demint (R-SC) and John McCain (R-AZ) to enact an “Earmark moratorium for the Fiscal Year 2009 Budget” (Amendment No. 4347). Others are outlandish, like the amendment from Tom Coburn to “require Congress to provide health care for all children in the U.S. before funding special interest in pork projects” (Amendment No. 3358). The votes on these amendments are interesting for both for policy and theoretical reasons. Transparency and government waste groups are interested in the votes because they represent explicit attempts to reform an appropriations process they view as opaque and bloated. And the votes are interesting theoretically, because they represent an attempt by legislators to self-regulate the federal pork barrel (Weingast, Shepsle and Johnsen 1981). The votes are also interesting because partisanship and ideal points are not very useful for predicting senators’ votes on the proposed reforms.

But legislators’ home styles are able to predict these votes: senators who are appropriators in their home styles are also appropriators when they cast votes in the Senate. Using the measures of home style and the set of roll call votes, I show that senators who discuss appropriations more often in press releases are systematically more likely to oppose reform to the appropriations process. This relationship remains even after conditioning on senators’ ideal point estimates, demonstrating that the home styles provide additional predictive power beyond behavior in the institution.

This provides evidence that legislators’ home styles are credible indicators of their broader representational style. Senators who articulate different expressed priorities to constituents also behave differently in the institution. But the expected differences can only be identified once we measure legislators’ home styles. This demonstrates the true power of

home styles for better understanding senators' representational style. Roll call votes are one of the most studied phenomenon in all of political science and yet the coalitions that I describe in this Chapter have received little attention in the literature on Congressional voting decisions. Only after we have carefully measured what legislators say to their constituents outside the institution are we able to identify these important coalitions in the Senate.

9.2 Correspondence Between What Legislators Say and Do

In this section, I argue that home styles are likely to be a credible reflection of senators' activities in Washington. While modelers of Congressional speech often conceptualize communication as cheap talk (Austen-Smith 1990), home styles are rarely viewed as cheap talk by members of Congress. The previous chapter demonstrated that senators value the opportunity to claim credit for grants, a fact bureaucrats exploit to cultivate support for their programs. Previous chapters have shown that senators strategically use their press releases to construct a stable home style that they perceive as important to warding off potential challengers. But there is also pressure on senators to make sure that the behavior they articulate in their press releases aligns with what they are doing in Washington.

Senators face pressure from three sources to maintain a correspondence between their home styles and their work in Washington. First, senators are responsive to electoral pressure with their decisions inside the institution and want to highlight these activities to constituents (Arnold 1992; Jones and Baumgartner 2005). If senators are in step with their constituents, senators will want to publicize their activities using press releases and other meth-

ods. For example, when senator Mike Dewine (R-OH) wrote the legislation that created a version of the fire grant program profiled in Chapter 8, he made sure that his constituents knew about his prominent role as an early co-sponsor of the legislation. Nearly every press release from DeWine declares that he “wrote and passed the FIRE Act (S. 1941)” (DeWine 2005).¹ Other senators send similar press releases to highlight the passage of their work becoming law or the progress of proposed legislation through the committee process.

Staffers also indicated that creating a connection between what legislators do in Washington and say in press releases increases the likelihood newspapers will use the press releases. This matters, because press secretaries strive to have their work reprinted in local papers (Cook 1989; Arnold 2004). If a press release describes a real and verifiable activity in Washington, newspaper editors will view the statement as more credible and newsworthy. This preference among news editors leads to press releases containing real information about senators’ work in Washington.

A third reason for the correspondence between what senators say in their press releases and do in Washington is that senators will often have incentive to *defend* the institutional tools used to represent constituents. Consider senators who are appropriators. These senators use their positions in the institution to secure money for their state and, in turn, use their press releases to announce the new money to their constituents. But when the resources senators use to secure this money are threatened, the appropriator senators will take action, defending the tools crucial to their representational styles. An observable implication is that senators with appropriations focused home styles should be systematically

¹As an interesting caveat, DeWine played an important role in the creation of the AFGP but he did not write nor pass the legislation on his own. DeWine was a cosponsor of the measure that Chris Dodd (D-CT) officially sponsored. S. 1941 made it out of committee but was never actually passed. Rather, the entire measure was offered as an amendment to a Defense appropriations bill. DeWine’s office appears comfortable sacrificing this nuance to inflate the DeWine’s important in the legislation’s passage.

more likely to oppose reform to the appropriations process in Congress.² This correspondence is indicative of senators' broader representational styles: senators employ a coherent strategy when representing their constituents in the institution and when explaining that work to constituents in press releases.

In this chapter I demonstrate that senators' home styles provide predictive power for otherwise difficult to explain roll call votes on amendments designed to reform the appropriations process. Before showing this correspondence, I describe how conflict around appropriations is structured in the Senate and why home styles are likely to be useful in identifying senators who will oppose reform to the appropriation process.

9.3 Appropriations Votes in the Senate

Observers of Congress have long noted that there are “three parties in Washington: Democrats, Republicans, and *Appropriators*”. Appropriators are often identified as the members of Congress who ensure their districts are showered with funds from spending bills and in turn claim credit for those funds in subsequent elections. While political economy theories of pork would assume that all members strive to be appropriators (Weingast, Shepsle and Johnsen 1981), Chapter 5 demonstrates that reality is more complicated. Some senators adopt substantively focused home styles that explicitly avoids claiming credit for appropriations. And in recent Congresses, appropriators have been under attack. Both the media and transparency groups now identify government waste as a byproduct of the particularized benefits members of Congress secure for their constituents. Some senators join in this critique, introducing amendments to spending bills to rescind specific earmarks or to

²Below, I make clear that this is not a causal relationship, rather a relationship induced by an unobserved common cause, legislators' representational style

reform the appropriations process more broadly. The goal of these amendments is to make it more difficult for appropriators to secure money for their constituents. And therefore reduce the number (or potency) of the appropriators in Congress.

Tom Coburn (R-OK) is one of the unofficial leaders of the war on appropriators and the tools they use to secure money for their constituents. Coburn, a fiscally conservative member of the Senate, introduces numerous amendments to reform the appropriation process. Consider his amendments to the emergency supplemental spending bill for the Iraq War and Hurricane Katrina (H.R. 4939). Coburn's amendment targeted earmarks from Democrats and Republicans. But the most prominent project targeted was a \$700 million rail line for Mississippi, which infuriated the Mississippi's Senate delegation. On the Senate floor, Trent Lott (R-MS) described Coburn and others who questioned the necessity of the money for rail lines as "oblivious" to the nation's transportation infrastructure. And when Coburn sought an opportunity to respond to arguments from Lott and Thad Cochran (R-MS), Cochran reminded Coburn that "this amendment is not debatable". When Coburn sought to respond to arguments made in Cochran's speech, Cochran became visibly angry and snapped, "Mr. President, I never asked any questions. The Senator has had an opportunity to describe his amendment".³

Other Republicans whose projects were the target of Coburn's amendments found themselves defending the money for their constituents away from the Senate floor. Embattled Republican Conrad Burns (R-MT) had inserted a provision to provide \$30 million dollars in funds for cattle ranchers and farmers in Montana. When confronted with the extra press attention resulting from Coburn's amendments, Burns' press secretary was defensive, stating that "First and foremost Sen. Burns is a Montanan and he understands the urgent need

³The animosity between Coburn and Cochran is well known in Washington. One article from the *The Hill* described how Thad Cochran and Tom Coburn, "have little in common" and how Cochran relies upon other senators to "help Cochran fend off Coburn" (Dufuor 2006).

amongst our producers who've been hit hard by rising energy costs directly attributed to Hurricane Katrina and extended droughts" (Stanton, 2006). Some Democrats, like Ken Salazar (D-CO), joined Republicans in attacking the Coburn amendment as an unfair assault on important money for constituents across the country. Put together, the opposition constituted one manifestation of the appropriators party in Washington.

Coburns' attempt to limit the power of appropriators in the emergency supplemental was far from an isolated incident. Both Republican and Democrat senators join Coburn in his attempt to reform the appropriation process. Ron Wyden, a liberal senator from Oregon, introduced an amendment to remove subsidies for oil companies into an appropriations bill. This enraged Pete Domenici (R-NM) who, while visibly angry, took to the Senate floor exclaiming that Wyden's "amendment is meaningless the way it's drawn" and then stormed off the floor in anger after a Wyden rebuttal. And even though Wyden's amendment failed, he received congratulations for his efforts from other senators who have made it their goal to reform the appropriations process. Including a very visible handshake and approving smile—from Tom Coburn, a senator on the other side of the ideological spectrum.

The battle around the inclusion of earmarks in the emergency supplemental and the broader attempts to reform the appropriations process illuminates a dimension of conflict in the Senate. But the conflict does not align well with the standard, ideology based explanation of behavior in Congress. The conflict was between neither partisans nor ideologues, but rather between members of Congress who benefited (and therefore supported) the provision of particularistic benefits in the supplemental and those members of Congress who viewed the spending (or components of the spending) as unnecessary.

The connection between roll call votes and communication provides another demonstration of why *communication* is an essential element of representational style. The mea-

tures of home styles facilitate the identification of the appropriators party, who otherwise appear identical to their fellow members of Congress. This helps to predict otherwise difficult to predict votes on the Senate floor. How representatives present their work to constituents *outside* of Congress provides systematic information about what members of Congress *do* in the institution.

9.3.1 Correspondence Between Votes and Press Releases Due To a Common Cause

I am *not* positing a causal relationship between what senators say in their press releases and their votes on proposed reforms. Rather, I am arguing that home styles will be a useful predictor of votes because they share a common cause with roll call votes: senators' representational styles. To make this clear, I outline a very simple model of the process I hypothesize is occurring in the Senate votes.

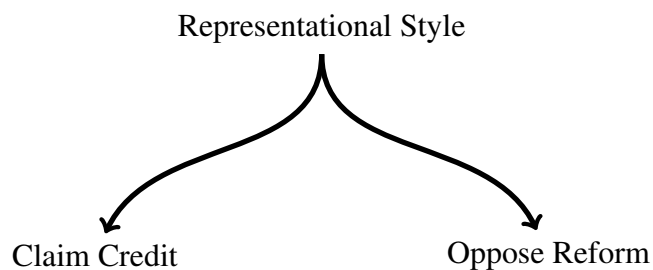


Figure 9.1: Causal Process For Credit Claiming and Opposing Reform

Figure 9.1 posits a simple causal model to explain the propensity for legislators to claim credit for federal money and the propensity to oppose reform to the appropriations process. The model supposes that legislators' propensity to claim credit and their votes on the proposed reforms are the result of a common cause: legislators' representational style,

the latent trait that describes the variety of ways legislators represent their constituents. According to this graph, if we observed legislators' representational style,

$$p(\text{Credit Claim, Oppose Reform}|\text{Style}) = p(\text{Credit Claim}|\text{Style})p(\text{Oppose Reform}|\text{Style})$$

or that legislators' propensity to claim credit and oppose reform are independent, conditional upon legislators' representational style. Of course, we do not observe the representational style. Our inability to condition on this latent characteristic induces the dependence analyzed in this chapter,

$$\begin{aligned} \int p(\text{Claim, Oppose}|\text{Style})d\text{Style} &= \int p(\text{Claim}|\text{Style})p(\text{Oppose}|\text{Claim, Style})d\text{Style} \\ &= p(\text{Claim})p(\text{Oppose}|\text{Claim}). \end{aligned} \tag{9.1}$$

Even though this dependence is noncausal, the relationship between credit claiming and opposition to reform is still theoretically important. Figure 9.1 shows that a dependence between roll call votes and senators' home styles implies that legislators are articulating a coherent representational style across many different activities. The dependence also means that home style provide a useful tool for learning about legislators' representational styles for both scholars of Congress and for constituents. In short, the dependence implies that home styles are a credible way to learn about legislators' broader representational style.

Putting Equation 9.1 into words provides further intuition for the relationship between home styles and roll call votes: legislators who adopt appropriators focused representational styles have systematically different home styles and votes on the proposed reforms. Legislators who adopt appropriations focused representational styles will want to publicize their work in securing grants. The result is that senators with appropriators focused rep-

representational styles will issue many press releases touting their work to constituents. The consequence is an appropriations focused home style. Similarly, legislators who adopt appropriations focused representational styles should also be systematically more likely to oppose reforms. After all, senators who regularly use earmarks to distribute money in their state will want to ensure they can continue to distribute the earmarks in the future.

The result is the correspondence between roll call votes and credit claiming formalized in Equation 9.1. Senators who are appropriators in their home styles will also be appropriators when they get to the Senate floor. The reason for this dependence is a shared common cause: legislators underlying representational style. In the next section, I demonstrate that how legislators communicate with their constituents is systematically related to how they vote on the otherwise difficult to predict roll call votes.

9.4 Home Style Appropriators are Roll Call Appropriators

In this section, I demonstrate that senators' home styles are systematically related to how they vote on appropriations reforms. Focusing first on the Coburn amendment to the Iraq War and Hurricane Katrina emergency supplemental, I show that the relationship between credit claiming and opposition to reform is strong, even within sub-strata of legislators with similar ideal points and members of the same party. I then show that the same relationship is found among almost all the other 34 votes included in the analysis: senators who are appropriators in their home styles are appropriators on the Senate floor.

9.4.1 Coburn Amendment to Emergency Supplemental

I first focus on the vote for a motion related to the Coburn amendment to emergency supplemental, which was described in detail in Section 9.3. As described above, this amendment was intended to strip out specific “pork” provisions from an emergency supplemental spending bill that was intended to aid the Gulf Coast after Hurricane Katrina. After a brief debate on the contents of the amendment, a motion was made to *table* it and if a motion is tabled, it is removed from consideration. Therefore, if a senator votes in favor of tabling an amendment, she is opposed to its passage. Senators who voted in favor of tabling the amendment were opposed to rescinding the specific earmarks: they were the senators defending the projects from removal in the appropriations bill.

The vote on the Coburn amendment was neither partisan nor ideological, essentially splitting both parties in half. An equal number of Democrats (21-21) and Republicans (28-26) favored and opposed the motion. And senators’ votes are not associated with legislators’ ideology. The left-hand plot in Figure 9.2 presents a nonparametric regression of senators’ votes on the amendment against their ideal points. The flat red-line indicates that legislators’ ideal points are orthogonal to their votes on the motion to table the Coburn amendment. The lack of a relationship between ideology and vote makes more sense the coalitions that supported and opposed the amendment. For example, Ted Kennedy and Richard Shelby both voted to table the amendment, while Russ Feingold and Tom Coburn both voted to continue consideration of the amendment. Both pairs of senators are from different parties and occupy different ends of the ideological spectrum.

The right-hand plot in Figure 9.2 shows that senators’ votes on the motion are strongly correlated with their home style. The red line is another nonparametric regression, this time a regression of senators’ vote on the motion to table against the senators’ home styles. Sen-

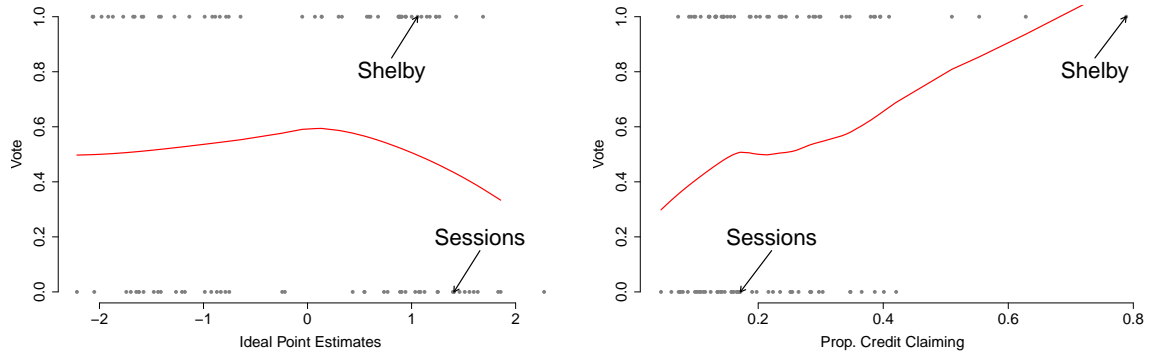


Figure 9.2: Votes on the Coburn Amendment Are Nonideological But Related to Home Styles

This figure shows that senators' votes on the motion to table the Coburn amendment was orthogonal to their ideology, but well predicted by their home styles. The left-hand plot presents a nonparametric regression of legislators' votes on the motion to table the Coburn amendment on legislators' ideal points. For almost all ranges of ideal points the relationship is flat, with a slight relationship between very conservative members and increased likelihood of opposing the amendment. Ideal points do not identify the dimension of conflict around the Coburn amendment. The right-hand plot is a nonparametric regression of senators vote on the proportion of press releases that they claim credit for federal funds. This indicates that senators who are appropriators in their home styles, and therefore located to the far-right of the plot, are systematically more likely to oppose reform and vote in favor of tabling the amendment.

ators located on the far-left of this plot are systematically more likely to support the contents of the Coburn amendment. This includes the senator who introduced the amendment—Tom Coburn—along with other senators who have made a crusade against government waste, including: Russ Feingold (D-WI), John Thune (R-ND), and Jim DeMint (R-SC). In contrast, senators on the far-right regularly claim credit for money and grants in their press releases and are united in their opposition to the Coburn amendment. Senators like Richard Shelby, Mike DeWine, and Barbara Mikulski defended the money allocated for the controversial projects in Mississippi and other locations in the Gulf coast.

The strong relationship between legislators' home styles and votes on the Coburn amendment remains even after conditioning on ideology and partisanship. Figure 9.3 presents the

relationship between senators' votes on the motion and legislators' propensity to claim credit for funds in their press releases, conditioned on legislators' ideology and partisanship. To condition on party and ideology, I created four bins of legislators: liberal Democrats (far left), moderate Democrats (second from left), moderate Republicans (second from right) and conservative Republicans (far right). In each bin, I then regressed legislators' votes on their home styles using a nonparametric regression. In each plot there is a strong and positive relationship between legislators' home styles and how they voted on the motion to table the Coburn amendment. This demonstrates that home styles are identifying voting blocs that ideal point estimates ignore.

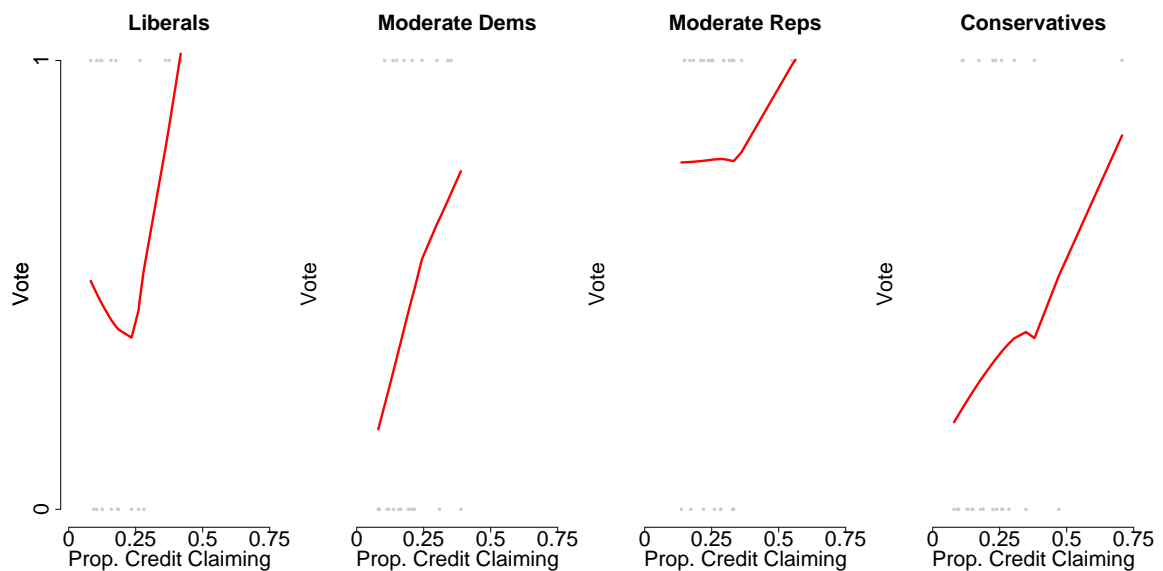


Figure 9.3: Home Style Appropriators are Roll Call Appropriators on the Coburn Supplemental, Even After Conditioning on Party and Ideal Points

This figure shows that the relationship between senators' vote on the motion to table the Coburn amendment and their home styles remains, even after conditioning on legislators' ideal points and partisanship. To condition on these factors, I created four bins of legislators: liberal Democrats, moderate Democrats, moderate Republicans, and conservative Republicans. Then in each bin, I regressed senators' vote on the motion on their home styles using a nonparametric regression. In each instances, senators' who claimed credit more often in their press releases are systematically more likely to oppose reform to the appropriations process.

9.4.2 The General Correspondence Between Home Styles and Votes

In this section I demonstrate that the relationship between credit claiming and opposition to reform in the Coburn amendment is replicated across several other votes and this relationship remains even after conditioning on legislators' ideal points. This provides strong evidence that home style appropriators are in fact roll call voting appropriators.⁴

To demonstrate this relationship, I use a probit regression to predict senators' roll call votes using home styles and ideal point estimates. For each of the 35 votes, I regressed senators' votes on their propensity to credit claim in press releases and ideal point estimates. I then compare two synthetic senators who have very different home styles, but similar roll call voting behavior (the synthetic pair is modeled on Richard Shelby and Jeff Sessions, using a less dramatic difference in proportion of press releases dedicated to credit claiming). Using these estimates, I compare the synthetic senators who are at the 25th and 75th percentile of credit claiming propensity, but have identical ideal points.

Figure 9.4 compares the expected probability of the appropriator opposing the reform (the senator at the 75th percentile of credit claiming) to the expected probability of the non-appropriator (the senator at the 25th percentile of credit claiming). The thick and thin bars represent 80 and 95 percent confidence intervals, respectively and the red-dot indicates the mean difference. The vertical line is at zero and represents no difference.⁵ If the difference is to the right of this zero line, this is an indication that appropriators are systematically

⁴To choose the 35 votes included in the analysis, I analyzed the Congressional voting record from 2005-2008. Any amendment or bill that was explicitly designed to 1) rescind a specific earmark, 2) reform the earmark or grant allocation process, or 3) create greater accountability in the way grants were distributed were included. The set of votes could likely to be extended to many appropriations votes, where votes are also difficult to predict.

⁵Note, that there is measurement error in both the estimated priorities and ideal points using the posterior distribution, along with uncertainty from the regression model. This inflates the confidence intervals seen here.

more likely to oppose reform.

This figure shows that in almost all instances, appropriators are systematically more likely to oppose reform than the nonappropriator. For example, the appropriator senator was over 50 percent more likely to oppose removing a provision attempting to limit certain kinds of spending in a bill intended to fund police work to fight narcotics. Appropriator senators are also more likely to oppose a provision to modify how the Department of Homeland Security allocates grants, and more likely to oppose a measure to redirect funds from a visitor center to Hurricane Katrina victims. While the extent to which appropriators are more likely to oppose reform than the nonappropriator varies depending upon the specific amendment, on average the difference is substantial. Appropriators are 30% more likely to oppose reform to the appropriations process than the nonappropriator.

9.5 Conclusion

This chapter demonstrates that senators' home styles are systematically related to what they do in Washington. Home styles provide predictive power for roll call votes, beyond ideal point estimates. I have demonstrated that this is consistent with legislators adopting a coherent and broad representational style that extends to many different areas of their work. This correspondence arises because legislators who adopt *appropriators* representational styles have systematically different focuses in their home styles and systematically different votes on the Senate floor. The result is that home styles identify an important, but previously unknown, group of legislators.

Of course, senators are unlikely to offer a complete recounting of their activities in Washington. Senators will fail to mention votes in Washington or votes cast if they are unpopular with constituents. For example, one press secretary recounted how his office

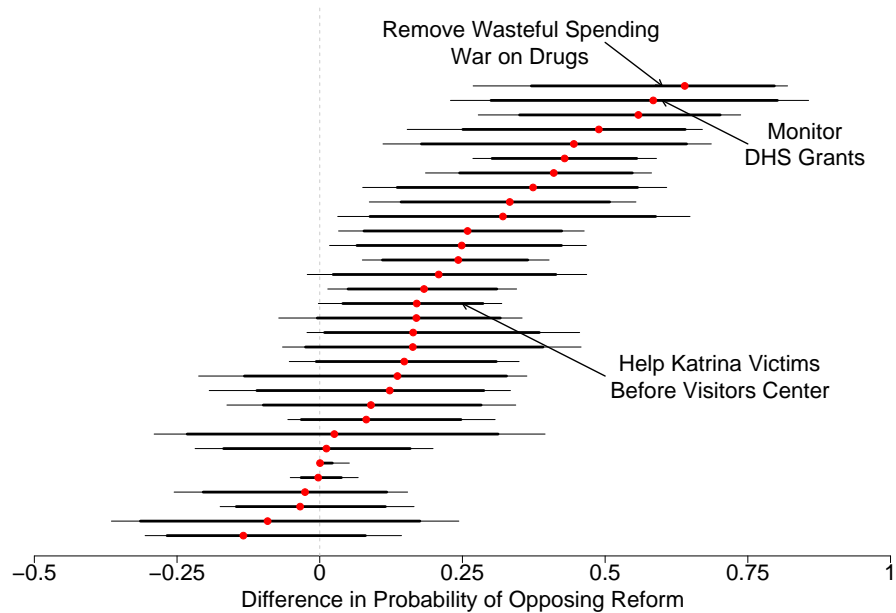


Figure 9.4: Appropriators in Home Styles are Appropriators on the Senate Floor

This figure compares the expected probability of the appropriator opposing the reform (the senator at the 75th percentile of credit claiming) to the expected probability of the nonappropriator (the senator at the 25th percentile of credit claiming). The thick and thin bars represent 80 and 95 percent confidence intervals, respectively and the red-dot indicates the mean difference. The vertical line is at zero and represents an expectation of no difference. If the difference is to the right of this zero line, this is an indication that appropriators are more likely to oppose reform.

attempted to redirect attention from unpopular votes on FISA legislation by “announcing every fire grant from that week” : the grants were used to bury the senator’s controversial vote (Personal Interview). But both the grants and earmarks are tied to work that the Senator actually performed in Washington. Therefore, senators work will be reflective of their work in Washington, but not a complete recounting of all work performed. A subject of important future work is identifying the conditions under which legislators engage in substantive discussions with constituents and the conditions when legislators will obscure their record using appropriations (see Chapter 10).

Chapter 9. Connecting Votes and Communication: Home Style Appropriators are Roll Call Appropriators

Even though senators may use home styles to obscure their record, the evidence in this chapter demonstrates that home styles are credible communication that provide real information to constituents about what legislators' activities in Washington. Because legislators who represent their constituents in different ways articulate distinctive priorities, this implies that constituents can use home styles as a credible *signal* to learn about the type of representation they are receiving in Washington. I have argued that this correspondence emerges from three sources: legislators wanting to disseminate their work to constituents, pressure to have press releases and other messages published in newspapers, and members of Congress explicitly working to defend the tools they use to construct their representational style.

Chapter 10

Conclusion

Abstract: When legislators represent their constituents, they do much more than vote on legislation. Representatives invest their time in Washington and, crucially, present and explain their work to constituents. In this book, I have demonstrated that senators' home styles are centrally important in this broader notion of representation. Home styles are important on their own as an important tool legislators use to connect with constituents. I demonstrate that senators articulate diverse, stable, and nonpartisan home styles that are indicative of senators' diverse motivations in Washington. But home styles are also important because they are systematically related to what senators do in Washington. Bureaucrats cultivate support for their program by facilitating the creation of appropriations focused home styles and senators' home styles predict important roll call votes. In this concluding chapter, I review the evidence for home style's central role in representation and describe why these findings matter for representation. I then outline two important extensions of this work: identifying the causes of senators' home styles and extending the study to describe how representatives at the federal, state, and local level use their prominence to explain work to constituents.

10.1 Introduction

This book has demonstrated that describing how legislators represent their constituents requires describing legislators' *representational style*, comprised of the many activities legislators use to represent their constituents in and outside of the institution. This broad definition of representation includes activities in traditional and narrow definitions of representation: legislators' roll call votes on the House and Senate floor. But it also includes how legislators invest their time in Washington and how legislators communicate with constituents. Taken together, legislators activities across these three areas define the particular way reflect (or ignore) the preferences of their constituents in the institution: legislators' representational styles.

In this book I have demonstrated that how legislators' communicate with their constituents, legislators' home styles, is a central component of representation. Home style is an important component of representational style on its own, because it represents the primary tool legislators use to connect with constituents and to define a public image that constituents use to learn about their member of Congress. I demonstrate that legislators craft a stable home style that reflects the diverse set of influences on members of Congress.

Legislators' home styles are also a central component of representation because they are systematically related to what legislators do in Washington. This demonstrates two ways that senators' home styles are credible communication with constituents and not cheap talk (Austen-Smith 1990). First, senators attach real value to the opportunity to credibly discuss topics with their constituents. Bureaucrats recognize this and create credit claiming opportunities for members of Congress in an effort to build support for threatened programs. This demonstrates that the opportunity to credibly announce grants to constituents is valuable enough to serve as a tool to defend an agency. Second, home styles provide a

credible indication of representatives' broader representational styles. Home styles predict senators' votes on a set of controversial roll call votes, even after conditioning on senators' ideal points. This relationship exists because senators' who are appropriators in their home styles are also appropriators on the Senate floor, indicative of a broader coherence in senators' representational styles.

To demonstrate home styles importance in representation, I introduce new, comprehensive, and systematic measures of legislators' home styles. I introduce a new statistical model to measure senators' expressed priorities and apply the model to a new comprehensive data set of every press release, from each Senate office, from 2005-2007. A series of validations demonstrates that the expressed priorities capture politically relevant topics and theoretically expected variation in how legislators explain their work to constituents.

I have also offered a new conceptualization of home style, that modifies the original conceptualization introduced in Fenno (1978) to include the impersonal methods of communication that are more likely to reach constituents. The original conceptualization of home style emphasized the personal and "folksy" way that members of Congress connected with their constituents. But constituents are much more likely to learn about their member of Congress through impersonal newspaper stories. Therefore, I have advanced a new conceptualization of home styles that emphasizes that home styles are the result of senators' and their staffs' broader strategy to create a public image, with home styles systematically related to senators' work in Washington.

This book represents the start of a broader research agenda examining how elected officials communicate with the public and the role of this communication in the process of representation. In this concluding chapter, I two important extensions of this research. First, systematically identifying the causes of senators' home styles is an important sub-

ject of future research. Second, extending the analysis to elected officials at all levels of government will yield substantial insights into how elected officials use communication to interact with the public. This will also illustrate the importance of activities outside of the institution for describing the process of representation and policy making in government.

10.2 The Causes of Home Styles

Throughout the book, I have described legislators' home styles and how they are systematically related to what legislators do in the institution. I have offered suggestive evidence of several causes of legislators' home styles—electoral pressure, committee assignments, career ambition, and policy goals. Numerous other factors are likely to matter and interact in a complicated way to create senators' home styles, such as personal experience and staff competence. For intuition about how these factors matter in creating a home style, it is useful to return to the case of Richard Shelby and Jeff Sessions and examine their trajectory into the Senate, and the effect of this trajectory on the senators' home styles.

The Boll Weevil In 1986, Richard Shelby had distinguished himself as a boll weevil in the House of Representatives: a conservative southern Democrat who supported Ronald Reagan's economic and tax programs. Building upon the conservative reputation Shelby developed in the House he ran for Alabama's Senate seat against incumbent Jeremiah Denton (R-AL) and won an extremely close race, securing only 0.4% more of the vote than his opponent. Shelby entered the Senate in 1987 with a complicated relationship with the Democratic leadership, who knew Shelby would be an unreliable vote on the most controversial proposals.

Upon his arrival in the Senate, Shelby continued to lean towards the right on roll call

votes. Shelby also infuriated his fellow Democrats with his vocal support for proposals from the Reagen and Bush administrations and, even worse, Shelby's public criticism of Democrats. But Shelby viewed his vocal criticism as a reasonable response to the Democratic leadership's failure to give Shelby the one thing he really wanted: a seat on the powerful appropriations committee. Of course, the Democrats were not going to allocate such a value committee seat to a senator so out of line with the party's agenda.

If Shelby was a mild nuisance during the Reagan and Bush presidency, he became a serious annoyance during Clinton's first term in office. Indeed, profiles of Shelby argued that his rise to prominence was a consequence of his vocal criticisms of the Clinton agenda in Alabama. The zenith of this criticism and the tension with the Clinton administration occurred during a joint press conference with Al Gore, carried live throughout Alabama in 1993. Shelby, with cameras recording, launched a full assault on the Clinton budget policies (ironically, for spending too much money in the first budget). Gore was flustered. He had prepared for a simple photo opportunity. The nuanced criticisms from Shelby were unexpected and a major embarrassment . But this time Shelby had taken the criticism too far and the White House responded with a real punishment for the Alabama senator. Using an executive order, Clinton moved 50 NASA related jobs out of Huntsville, Alabama and into Texas. Infuriated, the Alabama Senate delegation began a public war of words with the administration about why the jobs were moved.

While Shelby was publicly warring with Democrats throughout the government, Republican leaders began a quiet courtship of Shelby. By late 1994, Shelby had finally had enough and after the midterm elections announced that he would now caucus with the Republican party. And at the same press conference, it was announced that Shelby would be the newest member of the Senate appropriations committee.

It is widely believed (but never demonstrated) that the seat on the appropriations committee was offered as incentive for Shelby to make the party switch. Regardless of why Shelby received a seat on the committee, he has used the position to its full value. As demonstrated in Chapter 1, Shelby is known throughout Alabama for securing billions of dollars for Alabama, numerous defense contracts, and protected space research in Alabama. Focusing on these grants now dominates Shelby's press releases as well, where he portrays himself to constituents as the senator who can "bring home the bacon". Shelby's bargain with Republicans has paid substantial dividends.

The Judge While Richard Shelby was campaigning for the Senate in 1986, Jeff Sessions was beginning his hearings for a seat on the federal bench. Nomination hearings for district court judges are usually routine affairs. At the time of Sessions' hearing, only two previous nominees had failed. Ready for an easy confirmation, Sessions arrived in Washington.

Sessions' hearing, however, would be anything but routine. Early on in the hearing, comments Sessions had made in the past surfaced. These comments made Sessions appear biased against the ACLU, a skeptic about the civil rights movement, and in some instances a racist. Some comments undermined Sessions' impartiality, like his accusations that the NAACP was a Marxist organization. Other comments spoke to his suitability for the bench, like when he declared that he liked the Ku Klux Klan until he "found out they smoked pot".

For obvious reasons, the prospects for Sessions' appointments to the federal bench were seriously damaged by this portrayal. And his nomination finally failed after Howard Heflin (D- AL) broke the 9-9 tie in favor of rejecting sessions nomination. Sessions returned to Alabama deeply scarred by the hearings, his reputation tarnished, and embarrassed as he became the subject of jokes both in and out of the beltway.

The hearings did increase Sessions' prominence in Alabama, where the comments did

little to damage his political career. In 1994 Sessions was elected Attorney General, and in 1996 Sessions won the Senate seat held by Howell Heflin (D-AL). Ironically, among Sessions' first committee assignments was a seat on the Judiciary committee. He was now in a position to decide the fate of other judicial nominees, alongside the senators who had rejected his nomination. Sessions seized this opportunity and immersed himself in the work of the committee, quickly developing a reputation for his preparation before hearings and his even-handed treatment of nominees.

10.2.1 Implications for the Causes of Home Styles

The cases of Jeff Sessions and Richard Shelby illustrate the diverse causes that shape senators' representational styles. Shelby sought a seat on appropriation to create an appropriations focused representational style which he viewed as key to creating a large incumbency advantage. Sessions' position on the judiciary committee allows him to have a prominent role in a nomination process in which he is personally interested. This illustrates why senators' committee assignments affect senators' representational styles. Committee assignments come with institutional power that allows senators to define representational styles that would be otherwise difficult or impossible to define: Shelby would have difficulty securing the same amount of money for Alabama if he did not sit on the Appropriations committee and Sessions' seat on judiciary allows him a central role in the nomination process.

Senators' personal experiences will also affect the types of representation they provide to constituents. Sessions' experience as a judicial nominee and his very public (and personally embarrassing) nomination hearing fostered Sessions' interest in the nomination process. The result is that Sessions invests much more time into the process than we would

expect if he had not endured the embarrassing nomination hearing. Therefore, we might expect that personal and professional experiences will cause senators to adopt different home styles, much like personal experiences shape the way legislators represent their constituents in the institution (Burden 2007).

Beyond the cases of Jeff Sessions and Richard Shelby, interviews with Senate staffers suggest other causes of senators' home styles. In Chapter 9 I recounted an interview with a press secretary who said that his senator had experienced a difficult vote over FISA. The senator responded by "announcing every fire grant from that week". This suggests that ideologically out of step senators may react to constituent pressure by focusing on pork, rather than policy. This would allow senators to hide their substantive work from constituents, rather than facing the consequences of supporting a party that most of the constituents oppose.

While not a formal test of this hypothesis, Figure 10.1 provides some preliminary evidence for this hypothesis. The left-hand figure plots the probability of adopting a substantive home style (either a statesperson or a policy wonk) against the percent of the two party vote for Bush in the 2004 election. The blue line is the conditional probability of Democrats adopting a substantively oriented home style, while the red line is the conditional probability for Republicans. Democrats out of step with their constituents—representing states highly supportive of Bush in 2004—were much less likely to adopt a substance focused home style. Republicans in Democratic states shared the same aversion to substance.

The right hand plot shows that these senators were more likely to adopt an appropriations heavy home style. This plot shows the conditional probability of Democrats and Republicans adopting an appropriations focused style, given the percent of the vote for Bush in the 2004 election. Democrats in red states and Republicans in blue states gravitate

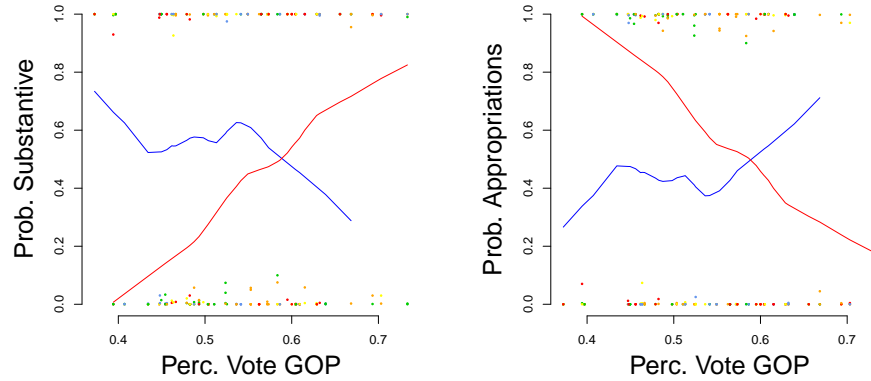


Figure 10.1: Senators Avoid Substance When Ideologically Out of Step

This figure demonstrates that Republicans in blue states and Democrats in red states are systematically more likely to focus their attention on appropriations and avoid adopting substantively focused representational styles. This suggests senators avoid substance when ideologically out of step with constituents.

towards appropriations: senators appear determined to cover up their out-of-step partisanship by focusing relatively more attention on appropriations than other senators.

Importantly, the comprehensive, systematic, and verifiable measures of home style introduced in this book make testing these and other hypotheses about the causes of legislators' home styles possible. Combined with valid designs for causal inference, the home styles allow for the identification of how various factors affect legislators' home styles. For example, one can use the measures of home style, shifts in committee assignments, and a matching design to plausibly identify the effect of committees on legislators home styles. Even simple regressions of legislators' home styles on potential causes is made feasible by having the home style measures.

10.3 How Elected Officials Communicate with Constituents

This book has focused on how senators use their press releases to publicly define the type of representation they provide constituents. But the basic framework that I advance in this book is applicable to many other institutions at the federal, state, and local levels of government. Politicians at all levels use the prominence of their office and their institutional tools to explain their work to constituents. But without sophisticated tools for analyzing these statements there is simply too much data to analyze using manual methods. The statistical model that I develop in this book therefore provides the opportunity to systematically what representatives say to constituents and why these statements matter for describing political representation. Therefore, the goal of this broader research program is to describe how representatives' activities *outside* of their formal institutional roles matters for representation.

For example, consider studies of how presidents communicate with the public. A large literature examines when president's go public: hold televised press conferences during the evening to draw the public's attention to important issues (Kernell 1986; Canes-Wrone 2006). Televised press conferences are important, but obscure other important ways president's attempt to influence public opinion. Presidents have substantial resources to manage their media message and use these resources to "go public" almost every day to explain policy proposals and to manage the reaction to scandals.

Rather than assuming only televised prime-time press conferences matter, using the tools outlined in this book one could engage in a systematic analysis of the president's daily agenda. Describing how presidents use their daily messages will likely yield substantial insights into how presidents are investing their resources and shaping legislation. For example, some studies use the president's state of the union address to describe the president's agenda (Lee 2008). This is likely to be a poor measure of the agenda: the president's

focus throughout the year is likely to change substantially from the address in January. The statistical model developed in this book could provide daily or weekly measures of the president's agenda. This, in turn, would facilitate much more empirically accurate models of how presidents affect public opinion, or how the president's agenda affects Congress, the media, the bureaucracy, and even the courts.

Many other actors use their institutional resources to provide explanations outside of the institution, all of which are likely to provide an important indicator of how these elected officials represent their constituents. House members regularly engage their constituents using both press releases and direct mailings. Governors use their institutional resources to explain their administrations work. Members of local councils use speeches, press releases, and other statements to define the type of representation they provide to their constituents. Agencies use press conferences to defend past decisions and to publicize new regulations or grants. Even supreme court justices make several statements during a court term. The statistical tools developed in this paper makes feasible the analysis of each of these data sources without investing substantially in a manual coding process.

Even beyond the context of American political institutions, public statements from political elites or news outlets are crucial components of the political process. Campaign rhetoric can be fruitfully studied using the model developed in Chapter 4. Campaigns regularly issues statements to explain a candidate's position or to attack the opposition and a campaigns' agenda is often portrayed as the proportion of statements allocated to a set of topics. Scholars often struggle to analyze the massive number of statements from political campaigns and rely upon secondary sources that likely change the inferential target. The model also provides a useful approach for analyzing media attention. For example, newspapers divide attention over a set of topics and comparing agendas across newspapers is

often an inferential target that the model is ideally suited to address. Finally, the model makes no assumptions about the language of the speaker and therefore is likely to be useful in a comparative context to study campaigns and elite speech in other countries.

10.4 Representation Outside the Senate

Representation is not only the choices that senators make in Washington. It also includes how legislators explain their choices to constituents. Elected officials use their office to distill their activities in Congress into explanations designed to increase support among constituents. Constituents learn about who their representative is or what she does through public statements and newspaper articles and use this information to inform their opinion of their representative.

Senators and House members recognize the importance of these statements for representation. Senators issue thousands of press releases, invest substantial resources in press secretaries, and work hard to maintain a public image in their home states. This book demonstrates that scholars of Congress should care as well. Communication is far from the cheap talk often depicted in formal models of Congress. Rather it occupies a central role in the broader characterization of representation.

In short, to understand how legislators represent their constituents *inside* the institution, it is crucial to know what legislators say *outside* the institution.

Appendix A

Methods Appendix

Abstract: This chapter provides the technical details for the model that I use to provide systematic, comprehensive, and verifiable measures of home style from senators' press releases. I first provide the full posterior, then describe how I use a variational approximation to characterize the posterior. Variational approximations allow for fully Bayesian inference by approximating the true posterior with a simpler, but still very general, approximating distribution. I make this approximation as close as possible, using a deterministic iterative algorithm to minimize the Kullback-Leibler divergence between the true posterior and the approximating distribution. I then describe how I use 10-fold cross validation and two different forms of the Bayesian Information Criterion (BIC) to perform model selection. I also provide the data generation process for Latent Dirichlet Allocation, which I used in Chapter 1 to do a literature review of the home style literature. I also describe how I use mutual information to provide principled cluster labels.

A.1 Replication Data

The collection of press releases, the measures of home styles, and a complete replication file is available through the dataverse network. See Grimmer (2010b) on the dataverse network for complete details.

A.2 Posterior Approximation by Variational Approximations

In this section I describe the model I introduce in Chapter 4 and the deterministic method I employ for posterior approximation.

To facilitate the discussion in this chapter, we provide a brief restatement of the model introduced in Chapter 4. Recall, that the attention legislator i ($i = 1, \dots, N$) allocates to topic k , ($k = 1, \dots, K$) in year t , ($t = 2005, 2006, 2007$), is denoted by π_{itk} . Collect the attention to all topics in the $K \times 1$ vector $\boldsymbol{\pi}_{it}$. Conditional on the expressed priorities, we draw the contents of press releases. The *topic* of press release j ($j = 1, \dots, D_{it}$) from senator i in year t is given by the indicator vector $\boldsymbol{\tau}_{ijt}$: if $\tau_{ijtk} = 1$ then the press release discusses topic k and the other elements are all zero. We draw the topic from a multinomial distribution, with the probability of topic k occurring given by $\boldsymbol{\pi}_{itk}$: $\boldsymbol{\tau}_{ijt} | \boldsymbol{\pi}_{it} \sim \text{Multinomial}(1, \boldsymbol{\pi}_{it})$. Conditional on the topic, we draw the words in the press release. We assume that the $w \times 1$ count vector \mathbf{y}_{ijt} is a draw from a multinomial distribution, with topic specific parameter $\boldsymbol{\theta}_k$ describing the rate at which different words are used in documents assigned to the topic. To complete the model specification, we assume a set of priors. Suppose that each legislator adopts one of S home style types in their press releases, which we operationalize using a mixture of Dirichlet distributions. Call legislator i 's type in year t , $\boldsymbol{\sigma}_{it}$ and assume that

$\sigma_{it} \sim \text{Multinomial}(1, \boldsymbol{\beta})$ where $\boldsymbol{\beta}$ is an $S \times 1$ vector (and assume that $\boldsymbol{\beta} \sim \text{Dirichlet}(\mathbf{1})$). Conditional on σ_{it} , we draw legislators' priorities $\boldsymbol{\pi}_{it}$ from the appropriate Dirichlet distribution: $\boldsymbol{\pi}_{it} | \sigma_{its} = 1, \boldsymbol{\alpha} \sim \text{Dirichlet}(\boldsymbol{\alpha}_s)$. Finally, we will suppose that each element of $\boldsymbol{\alpha}_s$ is a draw from a Gamma(0.25, 1) distribution.

The data generation process and priors imply the following hierarchical model,

$$\begin{aligned}
 \alpha_{sk} &\sim \text{Gamma}(0.25, 1) \text{ for all } k, s \\
 \boldsymbol{\beta} &\sim \text{Dirichlet}(\mathbf{1}) \\
 \boldsymbol{\theta}_k &\sim \text{Dirichlet}(\boldsymbol{\lambda}) \\
 \boldsymbol{\sigma}_{it} | \boldsymbol{\beta} &\sim \text{Multinomial}(1, \boldsymbol{\beta}) \text{ for all } i; t \\
 \boldsymbol{\pi}_{it} | \sigma_{its} = 1, \boldsymbol{\alpha}_s &\sim \text{Dirichlet}(\boldsymbol{\alpha}_s) \text{ for all } i; t \\
 \boldsymbol{\tau}_{ijt} | \boldsymbol{\pi}_{it} &\sim \text{Multinomial}(1, \boldsymbol{\pi}_{it}) \text{ for all } j; t; i \\
 \mathbf{y}_{ijt} | \boldsymbol{\tau}_{ijt} = 1, \boldsymbol{\theta}_k &\sim \text{Multinomial}(n_{ijt}, \boldsymbol{\theta}_k) \text{ for all } j; t; i
 \end{aligned}$$

The full posterior is given by,

$$\begin{aligned}
 p(\boldsymbol{\alpha}, \boldsymbol{\beta}, \boldsymbol{\theta}, \boldsymbol{\sigma}, \boldsymbol{\pi}, \boldsymbol{\tau} | \mathbf{Y}) &\propto \prod_{k=1}^K \prod_{s=1}^S \frac{\exp(-\frac{\alpha_{ks}}{1/4})}{1/4} \times \frac{\Gamma(\sum_{w=1}^W \lambda_w)}{\prod_{w=1}^W \Gamma(\lambda_w)} \prod_{w=1}^W \theta_{k,w}^{\lambda_w-1} \times \\
 &\prod_{i=1}^n \prod_{t=2005}^{2007} \prod_{s=1}^S \left[\beta_s \frac{\Gamma(\sum_{k=1}^K \alpha_{ks})}{\prod_{k=1}^K \Gamma(\alpha_{ks})} \prod_{k=1}^K \pi_{itik}^{\alpha_{ks}-1} \prod_{j=1}^{D_{it}} \prod_{k=1}^K \left[\pi_{itk} \prod_{w=1}^W \theta_{kw}^{y_{ijtw}} \right]^{\tau_{ijtk}} \right]^{\sigma_{its}} \quad (\text{A.1})
 \end{aligned}$$

A.2.1 Variational Approximations: Bayesian Inference for Complicated Posteriors

Due to the large number of components necessary to capture the variety of topics in press releases, computationally intensive approaches to inference—such as MCMC—are prohibitively slow. To avoid the difficulties associated with sampling methods and to estimate the entire posterior distribution on each senator's expressed agenda, I use a *variational approximation* to derive an analytical—rather than computational—approximation to the posterior distribu-

tion (Jordan et al. 1999; Grimmer 2009). Like EM algorithms, variational methods avoid the aliasing problem because optimization occurs according to a deterministic algorithm, based upon starting values and the posterior distribution.¹ Rather than generating MAP parameter estimates, variational methods analytically estimate the entire posterior distribution on each senator’s expressed agenda. To perform this estimation, we first restrict the model to a simpler, but *very general*, family of distributions. Then, we use the *calculus of variations* to select the member of this distributional family that is closest to the true posterior distribution, where proximity between the distributions is measured using the *Kullback-Leibler (KL) divergence* (Bishop 2006), a measure of proximity between two distributions. We now derive the update-equations used to estimate the posterior distributions.

A.2.2 Approximating the Posterior

We approximate the true posterior with a simpler, *but still very general* approximating distribution and then make this approximation as close as possible by minimizing the *Kullback-Leibler Divergence* between the approximating distribution and the true posterior. Specifically, we approximate Equation A.1 with,

$$\begin{aligned}
 q(\alpha, \beta, \theta, \sigma, \pi, \tau) &= q(\alpha)q(\beta)q(\theta)q(\sigma)q(\pi)q(\tau) \\
 &= q(\beta) \prod_{k=1}^K q(\theta)_k \prod_{i=1}^n \prod_{t=2005}^{2007} \left[q(\sigma)_{it}q(\pi)_{it} \prod_{j=1}^J q(\tau)_{ijt} \right] \prod_{s=1}^S q(\alpha)_s \quad (\text{A.2})
 \end{aligned}$$

where Equation A.2 follows from the exchangeability assumptions in the posterior and introduces *no* additional assumptions. We will restrict $q(\alpha_s)$ to be a point mass on the *maximum a posteriori* parameter estimates. Notice, that Equation A.2 is an approximation

¹Therefore, the variational approximation picks one of the $K!$ equivalent modes of the posterior to estimate.

because it contains additional assumptions than found in the true posterior—but makes no assumption about the distribution of the components of the factorized distribution. Rather the parametric family for these factors will be determined during optimization when we minimize the KL-divergence between the true posterior and the approximating distribution

A.2.3 Maximizing a Lower Bound to Minimize the KL-Divergence

To minimize the KL-divergence between the approximating distribution $q(\alpha, \beta, \theta, \sigma, \pi, \tau)$ and the true posterior $p(\alpha, \beta, \theta, \sigma, \pi, \tau|Y)$ we solve an equivalent maximization problem. To set up the problem, define the logarithm of the probability of the data,

$$\log p(Y) = \log \sum_{\sigma} \sum_{\tau} \iiint p(\alpha, \beta, \theta, \sigma, \pi, \tau|Y) d\theta d\alpha d\beta d\pi$$

Insert the approximating distribution by multiplying by 1,

$$\log p(Y) = \log \sum_{\sigma} \sum_{\tau} \iiint p(\alpha, \beta, \theta, \sigma, \pi, \tau|Y) \frac{q(\alpha, \beta, \theta, \sigma, \pi, \tau)}{q(\alpha, \beta, \theta, \sigma, \pi, \tau)} d\theta d\alpha d\beta d\pi$$

and apply Jensen's inequality to move the logarithm inside the integrals,

$$\log p(Y) \geq \underbrace{\sum_{\sigma} \sum_{\tau} \iiint q(\alpha, \beta, \theta, \sigma, \pi, \tau) \log \frac{p(\alpha, \beta, \theta, \sigma, \pi, \tau|Y)}{q(\alpha, \beta, \theta, \sigma, \pi, \tau)} d\theta d\alpha d\beta d\pi}_{\mathcal{L}(q)}.$$

The right-hand side of the above inequality is the lower bond that we will maximize, $\mathcal{L}(q)$, which is a *functional* of the approximating distribution.² To see that maximizing $\mathcal{L}(q)$ with respect to the approximating distribution q is equivalent to minimizing the KL-divergence

²Functionals are generalizations of functions: mappings from a space of functions to (in this case) the real numbers.

between the true and approximating distribution $\text{KL}(q||p)$, we perform a straightforward calculation to find,

$$p(\mathbf{Y}) = \mathcal{L}(q) + \text{KL}(q||p). \quad (\text{A.3})$$

Proof that maximizing $\mathcal{L}(q)$ is equivalent to minimizing $\text{KL}(q||p)$ follows directly from Equation A.3. $\text{KL}(q||p)$ is greater than zero for all q and $p(\mathbf{Y})$ is a fixed number (recall the marginalization is over the true posterior, which is fixed during the approximating process). Therefore, if $\mathcal{L}(q)$ increases, then $\text{KL}(q||p)$ must decrease. And if $\mathcal{L}(q)$ is at a maximum then $\text{KL}(q||p)$ must be at a minimum.

I now describe the algorithm I use to maximize $\mathcal{L}(q)$ with respect to the approximating distribution.

A.2.4 Iterative Algorithm

To maximize the lower bound on the probability of the data, I iteratively update the factorized distributions. To derive the algorithm, we initialize the components of the approximating distribution (for all values),

$$q(\boldsymbol{\alpha})_s^{\text{old}}, q(\boldsymbol{\beta})^{\text{old}}, q(\boldsymbol{\theta})_k^{\text{old}}, q(\boldsymbol{\sigma})_{it}^{\text{old}}, q(\boldsymbol{\pi})_{it}^{\text{old}}, q(\boldsymbol{\tau})_{ij}^{\text{old}}.$$

As an aside, the idea of initializing *distributions* should seem a little foreign at this point. After defining the algorithm, it will be very clear what this means. Suppose that we first want to obtain updated values for senator i 's priorities in the t^{th} year. It can be shown that

(Bishop 2006; Grimmer 2009)

$$\begin{aligned}
 \log q(\boldsymbol{\pi})_{it}^{\text{new}} &= \sum_{\boldsymbol{\sigma}} \sum_{\boldsymbol{\tau}} \iiint \log p(\boldsymbol{\alpha}, \boldsymbol{\beta}, \boldsymbol{\theta}, \boldsymbol{\sigma}, \boldsymbol{\pi}, \boldsymbol{\tau} | Y) \times \\
 &\quad q(\boldsymbol{\alpha})^{\text{old}} q(\boldsymbol{\beta})^{\text{old}} q(\boldsymbol{\theta})^{\text{old}} q(\boldsymbol{\sigma})^{\text{old}} q(\boldsymbol{\tau})^{\text{old}} d\boldsymbol{\theta} d\boldsymbol{\alpha} d\boldsymbol{\beta} + \text{const.} \\
 &= E_{\boldsymbol{\alpha}, \boldsymbol{\beta}, \boldsymbol{\theta}, \boldsymbol{\tau}, \boldsymbol{\sigma}} [\log p(\boldsymbol{\alpha}, \boldsymbol{\beta}, \boldsymbol{\theta}, \boldsymbol{\sigma}, \boldsymbol{\pi}, \boldsymbol{\tau} | Y)] + \text{const.}
 \end{aligned}$$

In words, the logarithm of the updated distribution $q(\boldsymbol{\pi})_{it}$ is the expected-value of the logarithm of the posterior, where the expectation is taken over the current estimates of the factors in the approximating distribution.

We can therefore define the iterative algorithm as follows, recalling that all expected values are taken over the approximating distribution:

$$\begin{aligned}
 q(\boldsymbol{\sigma})^{\text{new}} &\propto \exp\left(E_{\boldsymbol{\tau}, \boldsymbol{\theta}, \boldsymbol{\alpha}, \boldsymbol{\beta}, \boldsymbol{\pi}} [\log p(\boldsymbol{\alpha}, \boldsymbol{\beta}, \boldsymbol{\theta}, \boldsymbol{\sigma}, \boldsymbol{\pi}, \boldsymbol{\tau}, Y)]\right) \\
 q(\boldsymbol{\tau})^{\text{new}} &\propto \exp\left(E_{\boldsymbol{\sigma}, \boldsymbol{\theta}, \boldsymbol{\alpha}, \boldsymbol{\beta}, \boldsymbol{\pi}} [\log p(\boldsymbol{\alpha}, \boldsymbol{\beta}, \boldsymbol{\theta}, \boldsymbol{\sigma}, \boldsymbol{\pi}, \boldsymbol{\tau}, Y)]\right) \\
 q(\boldsymbol{\theta})^{\text{new}} &\propto \exp\left(E_{\boldsymbol{\sigma}, \boldsymbol{\tau}, \boldsymbol{\alpha}, \boldsymbol{\beta}, \boldsymbol{\pi}} [\log p(\boldsymbol{\alpha}, \boldsymbol{\beta}, \boldsymbol{\theta}, \boldsymbol{\sigma}, \boldsymbol{\pi}, \boldsymbol{\tau}, Y)]\right) \\
 q(\boldsymbol{\alpha})^{\text{new}} &\propto \exp\left(E_{\boldsymbol{\sigma}, \boldsymbol{\tau}, \boldsymbol{\theta}, \boldsymbol{\beta}, \boldsymbol{\pi}} [\log p(\boldsymbol{\alpha}, \boldsymbol{\beta}, \boldsymbol{\theta}, \boldsymbol{\sigma}, \boldsymbol{\pi}, \boldsymbol{\tau}, Y)]\right) \\
 q(\boldsymbol{\beta})^{\text{new}} &\propto \exp\left(E_{\boldsymbol{\sigma}, \boldsymbol{\tau}, \boldsymbol{\theta}, \boldsymbol{\alpha}, \boldsymbol{\pi}} [\log p(\boldsymbol{\alpha}, \boldsymbol{\beta}, \boldsymbol{\theta}, \boldsymbol{\sigma}, \boldsymbol{\pi}, \boldsymbol{\tau}, Y)]\right) \\
 q(\boldsymbol{\pi})^{\text{new}} &\propto \exp\left(E_{\boldsymbol{\sigma}, \boldsymbol{\tau}, \boldsymbol{\theta}, \boldsymbol{\alpha}, \boldsymbol{\beta}} [\log p(\boldsymbol{\alpha}, \boldsymbol{\beta}, \boldsymbol{\theta}, \boldsymbol{\sigma}, \boldsymbol{\pi}, \boldsymbol{\tau}, Y)]\right)
 \end{aligned}$$

We now describe each update step in detail, where we utilize the general theory of variational approximation for exponential family models to aid in determining distributional forms (Wainwright and Jordan 2008).

Update for $q(\boldsymbol{\sigma})_{it}$

$q(\boldsymbol{\sigma})_{it}$ is a Multinomial($1, \mathbf{c}_{it}$) distribution, with typical parameter c_{its}

$$\mathbf{c}_{its} \propto \exp \left\{ \mathbb{E}[\log \beta_s] + \log \Gamma \left(\sum_{k=1}^K \alpha_{ks} \right) - \sum_{k=1}^K \log \Gamma(\alpha_{ks}) + \sum_{k=1}^K (\alpha_{ks} - 1) \mathbb{E}[\log \pi_{itk}] \right\}.$$

We will compute $\mathbb{E}[\log \beta_s]$ and $\mathbb{E}[\log \pi_{itk}]$ after computing the parametric family of their approximating distribution.

Update for $q(\boldsymbol{\tau})_{ijt}$

$q(\boldsymbol{\tau})_{ijt}$ is a Multinomial($1, \mathbf{r}_{ijt}$) distribution with typical parameter,

$$r_{ijtk} \propto \exp \left\{ \mathbb{E}[\log \pi_{itk}] + \sum_{w=1}^W y_{ijtw} \mathbb{E}[\log \theta_{kw}] \right\}.$$

We will compute $\mathbb{E}[\log \pi_{itk}]$ and $\mathbb{E}[\log \theta_{kw}]$ after determining the parametric form of their approximating distribution.

Update for $q(\boldsymbol{\pi})_{it}$

$q(\boldsymbol{\pi})_{it}$ is a Dirichlet($\boldsymbol{\gamma}_{it}$) distribution, with typical parameter γ_{itk} equal to

$$\gamma_{itk} = \sum_{s=1}^S c_{its} \alpha_{sk}^* + \sum_{j=1}^{D_{it}} r_{ijtk}$$

Update for $q(\theta)_k$

$q(\theta)_k$ is a Dirichlet(η_k) distribution, with typical parameter equal to,

$$\eta_{kw} = \lambda_w + \sum_{i=1}^n \sum_{t=2005}^{2007} \sum_{j=1}^{D_{it}} r_{itjk} y_{itw}$$

Update for $q(\beta)$

$q(\beta)$ is a Dirichlet(ϕ) distribution, with typical parameter ϕ_s equal to,

$$\phi_s = 1 + \sum_{i=1}^n \sum_{t=2005}^{2007} c_{its}$$

Completing $q(\sigma)_{it}$ and $q(\tau)_{ijt}$

To finish $q(\sigma)_{it}$ compute $E[\log \beta_s] = \Psi(\phi_s) - \Psi(\sum_{z=1}^S \phi_z)$ where $\Psi(\cdot)$ is the digamma function (the derivative of the gamma function) and $E[\log \pi_{itk}] = \Psi(\gamma_{itk}) - \Psi(\sum_{z=1}^K \gamma_{itz})$. To complete the update step for $q(\tau)_{ijt}$ we need to compute $E[\log \theta_{kw}] = \Psi(\eta_{kw}) - \Psi(\sum_{z=1}^W \eta_{kz})$.

Update Steps for α_s

A closed form update step is unavailable for α_s so we rely upon an efficient Newton-Raphson algorithm, developed in Minka (2000). Define $N_s = \sum_{i=1}^n \sum_{t=2005}^{2007} c_{its}$. Calculating the expected values and differentiating with respect to α_{ks} shows that

$$\frac{\partial \log q(\alpha)_k^{\text{new}}}{\partial \alpha_{ks}} = -\frac{1}{\lambda} + N_s \Psi\left(\sum_{k=1}^K \alpha_{ks}\right) - N_s \Psi(\alpha_{ks}) + \sum_{i=1}^n \sum_{t=2005}^{2007} c_{its} \frac{\left(\Psi(\gamma_{itk}) - \Psi(\sum_{z=1}^K \gamma_{itz})\right)}{N_s}$$

and collect all the first derivatives into the (gradient) vector $\frac{\partial \log q(\alpha)_k^{\text{new}}}{\partial \alpha_k}$. Define H as the Hessian (matrix of second derivatives). Typical on diagonal element $h_{jj} = N_s \Psi'(\sum_{k=1}^K \alpha_{ks}) -$

$N_s \Psi'(\alpha_{js})$ where $\Psi'(\cdot)$ is the trigamma function (the derivative of the digamma function) and the typical off-diagonal element ($a \neq b$) we have $h_{ab} = N_z \Psi'(\sum_{k=1}^K \alpha_{ks})$. For each s we repeat,

$$\alpha_s^{\text{new}} = \alpha_s^{\text{old}} - \mathbf{H}^{-1} \frac{\partial \log q(\boldsymbol{\alpha})_k^{\text{new}}}{\partial \alpha_k}$$

until the change in α_s drops below a tolerance level (10^{-8} in the implementation). \mathbf{H} 's structure makes it is easily invertible, making the Newton-Raphson algorithm exceedingly fast.

Details of Implementation

The algorithm is run into change in a *lower-bound* on the data $\mathcal{L}(q)$ drops below a tolerance level 10^{-5} (in the supplemental notes, we compute the particular form of $\mathcal{L}(q)$). Table A.1 provides pseudocode for the variational approximation.

A.2.5 Determining Number of Topics and Styles

Model selection—determining the number of topics (K) and styles (S)—is a difficult problem. Because we obtain MAP parameter estimates for each α_s , we are unable to use the lower-bound on the log-evidence as a Bayes' factor directly as in Bishop (2006) and Grimmer (2009). To determine the model complexity I use two different approaches. First, I use substantive criterion and 10-fold cross validation to determine the number of topics. After deciding on the number of topics, I use two different modified forms of the Bayesian Information Criterion (BIC) to determine the number of styles (Kass and Raftery 1995).³

³I do not search over the whole grid of topics \times styles because the massive computing resources that would be necessary. To perform a 10-fold cross-validation to search over 10 styles and 10 different topic

Table A.1: Pseudo Code for Variational Approximation

<p>Initialize γ_{it}^{old} (for all i and t), η_k^{old} (for all k), ϕ^{old}, α_s^{old} (for all s). Do until convergence in lower-bound. - for all i, t, j and k, set $r_{ijk}^{\text{new}} \propto \exp\left(\Psi(\gamma_{itk}^{\text{old}}) - \Psi(\sum_{z=1}^K \gamma_{itz}^{\text{old}}) + \sum_{w=1}^W y_{ijtw} \left[\Psi(\eta_{kw}^{\text{old}}) - \Psi(\sum_{z=1}^W \eta_{kz}^{\text{old}})\right]\right)$ - for all i, t, and s set $c_{its}^{\text{new}} \propto \exp\left(\Psi(\phi_s^{\text{old}}) - \Psi(\sum_{z=1}^S \phi_z^{\text{old}}) + \log \Gamma(\sum_{k=1}^K \alpha_{ks}^{\text{old}}) - \sum_{k=1}^K \log \Gamma(\alpha_{ks}^{\text{old}}) + \sum_{k=1}^K (\alpha_{ks}^{\text{old}} - 1) [\Psi(\gamma_{itk}^{\text{old}}) - \Psi(\sum_{z=1}^K \gamma_{itz}^{\text{old}})]\right)$ - for all i, t, and k set $\gamma_{itk}^{\text{new}} = \sum_{s=1}^S c_{its}^{\text{new}} \alpha_{ks}^{\text{old}} + \sum_{j=1}^{D_{it}} r_{ijk}^{\text{new}}$ - for all k and w set $\eta_{kw}^{\text{new}} = \lambda_w + \sum_{i=1}^n \sum_{t=2005}^{2007} \sum_{j=1}^{D_{it}} r_{ijk}^{\text{new}} y_{ijtw}$ - for all s set $\phi_s^{\text{new}} = 1 + \sum_{i=1}^n \sum_{t=2005}^{2007} c_{its}^{\text{new}}$ - For all s obtain α_s^{new} using Newton-Raphson algorithm. - Evaluate lower-bound. If converged: Return posterior approximation.</p>

Importantly, the results presented in the paper are robust to modifying the number of topics or styles assumed and future work will move to developing non-parametric versions of these models, using the Hierarchical Dirichlet process prior and the Pitman-Yor process (Teh and Jordan 2009).

A.2.6 Number of Topics

To determine the number of topics in the model, I first followed a procedure outlined in Quinn et al. (2010), I used extensive testing, varying the number of topics from 5 to 85.

Too few topics results in conceptually distinct issue being lumped together, while too many numbers would require 1,000 runs of the model (not counting the random restarts necessary to ensure we have not reached a local maximum).

topics results in the same issues being broken apart. 44 topics captured distinctive topics (for example, energy and agriculture), while preventing conceptually similar issues (such as the discussion of CHIP and SCHIP) from being assigned to different topics.

To provide statistical evidence for this model selection, I performed a 10-fold cross validation, using an approximation to the posterior-predictive distribution for a training set (Bishop 2006). To simplify the computation, we assume that $S = 1$ (once again, this should only have marginal effects on the number of topics). The approximate posterior predictive distribution (for some document \hat{y}), $p(\hat{y}|\mathbf{Y})$ is given by

$$p(\hat{y}|\mathbf{Y}) \approx \sum_{\hat{\tau}} \iint p(\hat{y}|\hat{\tau}, \boldsymbol{\theta}) p(\hat{\tau}|\boldsymbol{\pi}) q(\boldsymbol{\theta}|\boldsymbol{\eta}) q(\boldsymbol{\pi}) d\boldsymbol{\theta} d\boldsymbol{\pi}$$

Marginalizing over the variables yields,

$$p(\hat{y}|\mathbf{Y}) \propto \sum_{k=1}^K \left(\underbrace{\frac{(\sum_{t=1}^w y_t)!}{\prod_{t=1}^w y_t!} \frac{\Gamma(\sum_{t=1}^w \eta_{kw})}{\Gamma(\sum_{t=1}^w \eta_{kw} + y_w)}}_{\text{Dirichlet Compound Multinomial}} \prod_{t=1}^w \frac{\Gamma(y_w + \eta_{kw})}{\Gamma(\eta_{kw})} \prod_{i=1}^n \frac{\gamma_{itk}}{\sum_{k=1}^K \gamma_{itk}} \right).$$

Using this predictive distribution, I performed approximate 10-fold cross-validation. (The cross-validation is approximate because I used the approximating distribution). The results indicate the data best supports choosing between 40-50 topics for the model of home style. This corroborates with a finding from Grimmer (2009), where a nonparametric topic model applied to the press release data suggests about 45 topics are supported by the data. Therefore, we use 44 topics in the model employed throughout the book.

A.2.7 Number of Styles

A second model choice problem is choosing the number of styles in the prior. Substantive search is less helpful here, so I used two different versions of BIC to determine an appropriate number of clusters. Recall that the BIC for a particular model is given by $\text{BIC} = 2 \log p(\mathbf{Y})$. We will approximate $2 \log p(\mathbf{Y})$ in two ways. First, we use the lower-bound on the log-probability of the data, $\mathcal{L}(q)$ and compute $2 \log p(\mathbf{Y}) \approx 2(\mathcal{L}(q) + \log K! + \log S!) - (K \times S)(n)$ where K and S are the number of topics and styles for a particular model. A second form of BIC is suggested in Airolidi et al. (2008) and we will also use it here. Call $\bar{\pi}$, $\bar{\theta}$, $\bar{\tau}$ the expected values for the parameters, where the expectation is taken over the approximating distribution. Then this BIC is given by $2 \log p(\mathbf{Y}) \approx 2 \log p(\mathbf{Y}|\bar{\pi}, \bar{\theta}, \bar{\tau}) - (K \times S)(n)$. Not surprisingly, the two versions of BIC give very similar answers, indicating that about four to six styles are supported by the data. I choose a middle value for the model, assuming 5 styles.

A.3 Latent Dirichlet Allocation

In Chapter 1 I use *Latent Dirichlet Allocation* (LDA) to provide a summary of the home style literature (Blei et al. 2003). In this appendix, I describe the data generation process for LDA. Suppose that we observe a set of M documents ($m = 1, \dots, M$), each of which comprised of N words ($i = 1, \dots, N$). Denote document m by $\mathbf{w}_m = (w_{m1}, \dots, w_{mN})$. Assume that there are K , ($k = 1, \dots, K$) topics discussed in the collection of documents. Call τ_{mi} an indicator for the i^{th} word in the m^{th} document. Let $\boldsymbol{\pi}_m = (\pi_{m1}, \dots, \pi_{mK})$ describe the attention each topic receives in document m . Conditional on this attention, we draw the topic of each word used in the document $\tau_{mi} \sim \text{Multinomial}(1, \boldsymbol{\pi}_m)$. Conditional on

a word's topic, we draw the actual word, $w_{mi}|\tau_{mik} = 1, \theta \sim \text{Multinomial}(1, \theta_k)$ where θ_k describes the relative rate words occur in a particular topic. To complete the specification, we suppose that $\theta_k \sim \text{Dirichlet}(\mathbf{1})$ and that $\pi_m \sim \text{Dirichlet}(\alpha)$. This results in the following data generation process for LDA (Blei et al. 2003),

$$\begin{aligned} \theta_k &\sim \text{Dirichlet}(\mathbf{1}) \text{ for } k = 1, \dots, K \\ \pi_m &\sim \text{Dirichlet}(\alpha) \text{ for } m = 1, \dots, M \\ \tau_{mi} &\sim \text{Multinomial}(\pi_m) \text{ for } i = 1, \dots, N; m = 1, \dots, M \\ w_{mi}|\tau_{mik} = 1 &\sim \text{Multinomial}(\theta_k) \text{ for } i = 1, \dots, N; m = 1, \dots, M \end{aligned}$$

Posterior approximation occurs according to a mixture of variational approximations and maximum likelihood estimation, via a *variational-expectation maximization algorithm*, outlined in Blei et al. (2003). To estimate the model, I used the C implementation of LDA (Blei 2004).

To generate Figure 1.1, we focus on the estimated attention to the topics, π_m . Collect all the documents from a given year t , ($t = 1979, \dots, 2003$) into the set \mathcal{T} . Define $\bar{\pi}_t = \sum_{j \in \mathcal{T}} \frac{\pi_j}{|\mathcal{T}|}$. We will call $\pi = (\bar{\pi}_{1979}, \dots, \bar{\pi}_{2003})$. To describe the trend in attention to each topic, we calculate a nonparametric (LOESS) regression of π on the years.

A.4 Chapter 3 Appendix

A.4.1 Collecting the Press Releases

To collect the press releases, I wrote a set of “screen-scraping” scripts in the Python computing language. For each senator, I wrote a script that extracted the press releases from a senator’s website, while also recording information about when the press release was is-

sued. Applying the script to one senator’s web page created a collection of press releases in a machine readable format, enabling their analysis for statistical models for text.

A.4.2 Using Mutual Information to Compare Collections of Texts

The mutual information between a document type and a word measures the amount of information a word provides about whether a randomly chosen document is a press release or a floor speech. Suppose that after estimating the topics using the expressed agenda model, we want to compute the probability that a randomly chosen document $\mathbf{y}_{ijt} \in \mathbf{Y}$ is a press release. Define the event that a document is a press release as $\zeta = I(\tau_{ijt} = 1)$ and $\Pr(\zeta = 1)$ is the probability that the document is a press release. We can summarize our uncertainty about this classification by calculating the *entropy* that the document is a press release, $H(p)$ (MacKay 2003),

$$H(p) = - \sum_{t=0}^1 \Pr(\zeta = t) \log_2 \Pr(\zeta = t) \quad (\text{A.4})$$

where \log_2 is used because uncertainty is usually measured in bits.⁴

We use the reduction in entropy after conditioning upon whether a word appears in a document as a measure of how well a word predicts whether documents are press releases or floor speeches. To represent the uncertainty after conditioning upon the additional information, let ω be an indicator for whether w , appears in a document \mathbf{y}_{ijt} . We can now define

⁴Entropy encodes uncertainty about whether a topic generated a document. It reaches a minimum if all the mass of the probability distribution is centered upon one value (all documents assigned are either press releases or floor speeches) and reaches a maximum if the probability mass is evenly spread over the possible events (the documents are spread evenly between floor speeches and press releases.) (MacKay 2003).

the conditional entropy for a topic k given a word w , $H(p|w)$, as

$$H(p|w) = - \sum_{t=0}^1 \sum_{s=0}^1 \Pr(\zeta = t, \omega = s) \log_2 \Pr(\zeta = t|\omega = s). \quad (\text{A.5})$$

We select stems that provide a great deal of information about whether a randomly chosen document is a press release or floor statement. Intuitively, we want to measure how much a stem reduces the uncertainty in $H(p)$, which we can compute as the difference between Equations A.4 and A.5. Define this difference as the *mutual information* with stem w and denote this quantity with $I(p|w) = H(p) - H(p|w)$ (MacKay 2003). If a word w provides no information about whether a document is a press release or floor speech, then $H(p) = H(p|w)$ and $I(p|w) = 0$. If word w removes all uncertainty about whether a document is a press release or floor speech, then $H(p|w) = 0$ and $I(p|w)$ obtains its maximum possible value, $H(p)$. Further, as the information a word provides about the probability a document being a press release increases, $I(p|w)$ will increase as well (until reaching its maximum). Thus, the stems with the highest mutual information with each topic provide effective labels for a topic.⁵

To derive an expression for mutual information we apply the definitions of $H(p)$ and $H(p|w)$ to obtain

$$H(p) - H(p|w) = \sum_{t=0}^1 \sum_{s=0}^1 \Pr(\zeta = t, \omega = s) \log_2 \frac{\Pr(\zeta = t, \omega = s)}{\Pr(\zeta = t)\Pr(\omega = s)}. \quad (\text{A.6})$$

To evaluate Equation A.6 we compute the necessary probabilities. Define n_p as the number of press releases and n_s as the number of floor speeches and $D = n_p + n_s$ as the total number of documents. Define the number of documents in which word w_j appears as

⁵Mutual information is a well established concept in information theory and is commonly used for term selection in supervised learning methods (Manning et al. 2008).

$n_j = \sum_{i=1}^D \omega_j^i$ and the number of documents where w_j does not appear as $n_{-j} = D - n_j$. Call $i()$ an indicator function, with $i(p = 1)$ indicating a document is a press release and $i(s = 1)$ indicating a document is a floor speech. To finish the counts, we need to attend to the four possible joint counts of words and document type,

$$\begin{aligned} n_{j,p} &= \sum_{i=1}^D i(p_i = 1)\omega_j^i & ; & & n_{j,-p} &= \sum_{i=1}^D i(s_i = 1)\omega_j^i \\ n_{-j,p} &= \sum_{i=1}^D i(p_i = 1)(1 - \omega_j^i) & ; & & n_{-j,-p} &= \sum_{i=1}^D i(s_i = 1)(1 - \omega_j^i). \end{aligned}$$

The probabilities are then defined as,

$$\begin{aligned} \Pr(\zeta = 1, \omega_j = 1) &= \frac{n_{j,p}}{D} & ; & & \Pr(\zeta = 1, \omega_j = 0) &= \frac{n_{j,-p}}{D} & ; & & \Pr(\zeta = 0, \omega_j = 1) &= \frac{n_{-j,p}}{D} \\ \Pr(\zeta = 0, \omega_j = 0) &= \frac{n_{-j,-p}}{D} & ; & & \Pr(\zeta = 1) &= \frac{n_k}{D} & & & \Pr(\zeta = 0) &= \frac{n_{-p}}{D} \\ & & & & \Pr(\omega_j = 1) &= \frac{n_j}{D} & & & \Pr(\omega_j = 0) &= \frac{n_{-j}}{D} \end{aligned}$$

This implies the following formula for $I(p|w_j)$ (Manning et al. 2008),

$$I(p|w_j) = \frac{n_{j,p}}{D} \log_2 \frac{n_{j,p}D}{n_j n_p} + \frac{n_{j,-p}}{D} \log_2 \frac{n_{j,-p}D}{n_j n_{-p}} + \frac{n_{-j,p}}{D} \log_2 \frac{n_{-j,p}D}{n_{-j} n_p} + \frac{n_{-j,-p}}{D} \log_2 \frac{n_{-j,-p}D}{n_{-j} n_{-p}}.$$

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