Issue Divisions and U.S. Supreme Court Decision Making*

Douglas R. Rice
Assistant Professor
Department of Political Science
University of Mississippi
drrice@olemiss.edu

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Abstract

For the U.S. Supreme Court, opinion writing is an all-important activity with critical consequences for law and public policy. The authoring of separate – dissenting or concurring – opinions, though, is frequently regarded as deleterious to the Court's institutional legitimacy and the efficacy of the majority opinion. Research has therefore focused on the occurrence of separate opinions with scholarly consensus holding they arise as a function of ideological distance, the number of issue dimensions on which to disagree, and other contextual factors. Leveraging the content of all Court opinions between 1955 and 2009, I argue issue dimensions are instead a variable which dissenting justices seek to strategically alter. An examination of the effect of separate opinion content on majority opinions indicates dissenting opinions force majority opinions to address additional topics, and I provide evidence the dynamic is driven by the strategic behavior of dissenting justices seeking to realign the Court.

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In order to arrive at a majority consensus, the small group of United States Supreme Court justices must bargain with one another and accommodate other views. The influences on and implications of this process have been well-studied (e.g., Murphy 1964, Epstein and Knight 1998, Maltzman, Spriggs and Wahlbeck 2000). Justices behave strategically in order to arrive at the outcome closest to their preferred policy, subject to a variety of constraints. The product of bargaining and accommodation is an opinion of the Court which reflects an agreed upon outcome for a majority of the justices and which more broadly holds incredible value in shaping future judicial interpretations and shifting public policy. The justice who loses in this process – whose preferences are not reflected by this process of bargaining and accommodation – may choose to write a separate opinion, with their dissent primarily resulting from ideological disagreement on the underlying issue of a decision (Benesh and Spaeth 2007). Bargaining and accommodation, that is, occurs largely over policy preferences on a single dimension.

In this article, I challenge this framework as incomplete. I argue that, given the goals of justices, we should not expect a justice who has chosen to dissent to go quietly into the night; rather, we should expect their opinion to complicate the calculus of the majority. One principal method for doing so would be by introducing or emphasizing a different issue on which the case should be decided, a strategy well-established in both political science research generally (e.g., Riker 1984; 1986; 1996) and in studies at nearly all stages of Supreme Court decision making (Epstein and Shvetsova 2002, Wedeking 2010, Black, Schutte and Johnson 2013). The totality of this work suggests that political actors attempt to change the issue frame of a conflict in order to arrive at a more preferable outcome. From this account, I argue dissenting authors will strategically introduce new issue frames – and thus disagreement as to the issue – which thereafter requires majority opinions to address those same issues lest they lose their majority (Lax and Cameron 2007). In all, the characteristics of legal development – here, the opinion crafting process – and the strategic behavior of dissenting justices is seen

to fundamentally alter the content and structure of majority opinions.

Utilizing tools for computational text analysis in conjunction with more than 60 years of Supreme Court opinions, I present analyses of two dimensions of Supreme Court opinions – topic concentration and topic similarity – and offer new empirical support for the strategic use of issue frames on the Supreme Court and the implications of strategic framing for the content of judicial opinions. In the first section, I demonstrate increases in the number dissenting opinions are associated with marked and statistically significant decreases in the topic concentration of majority opinions, helping to resolve contradictory results in prior research. In the second section, I build on recent theories of bargaining on the Court (e.g., Lax and Cameron 2007, Anderson and Tahk 2007) and provide new evidence that the decrease in topic concentration in majority opinions is not a function of *ex ante* determined issue dimensions – as prior research has argued – but is instead a function of the strategic efforts of dissenting justices.

Crafting the Dissent

It is uncontroversial to argue that justices bargain over the outcome of a court case (Wahlbeck, Spriggs and Maltzman 1998). Yet the justices frequently remain at odds and offer separate opinions which reflect their own unresolved differences as to the case at hand. This decision to publish a separate opinion is frequently viewed as suboptimal for the Court's institutional legitimacy (e.g., Hand 1958, Gerber and Park 1997) and may impose costs on the impact of a particular majority opinion and subsequent legal development (Murphy 1964, Wahlbeck, Spriggs and Maltzman 1999). Yet, justices have frequently chosen to publish separate – regular concurring, specially concurring, and dissenting – opinions (Caldeira and Zorn 1998, Walker, Epstein and Dixon 1988, Hendershot et al. 2013). In their work on the decision to author separate opinions, Wahlbeck, Spriggs and Maltzman (1999) point to

both ideological and institutional motivations, and conclude that the decision is ultimately a choice made by justices "based on their policy preferences while simultaneously responding to the institutional and strategic context of decision making on the Supreme Court" (390). Thus, from a purely ideological perspective, we would expect – and Wahlbeck, Spriggs and Maltzman (1999) find evidence to support – that the further a justice is ideologically from the majority, the more likely they will be to issue a separate opinion.

The primacy of ideology in the decision to write separately is largely based on median voter theories of the Court; increases in ideological distance from the majority coalition would thus increase dissatisfaction with the majority opinion, and in turn increase the probability of a separate opinion. This intuition and finding fits nicely with the foundational works on the median voter models of the Supreme Court, as those works relied on the assumption of a unidimensional policy space (e.g., Segal 1997, Groffman and Brazill 2002). More recent works have sought to develop methods to account for separate medians by issue area, but still rely on the assumption that each individual case is best represented by a single issue dimension (Martin, Quinn and Epstein 2005, Lauderdale and Clark 2012).

The presence of *multiple* issue dimensions in a single case, though, is theorized elsewhere to influence the probability of writing separately. For instance, scholars have hypothesized increases in the number of issue dimensions decreases the ability to satisfy each individual justice in a single opinion. Cases with multiple issue dimensions are therefore likely to yield more separate opinions (e.g., Wahlbeck, Spriggs and Maltzman 1999). Authors of an example study state, "it has been argued that dissenting opinions more often issue in complex cases because there are more dimensions with which a given justice might disagree" (Benesh and Spaeth 2007, 763). Similarly, work in the area of voting fluidity has hypothesized and found evidence to suggest that justices are more likely to switch their votes in areas where the case is particularly complex, or potentially involves many different legal issues (Howard 1968, Maltzman and Wahlbeck 1996). With research indicating cases *do* – at least from time

to time – feature multiple issue dimensions, potential incompatability with median voter models was problematic. Seeking to resolve this, Anderson and Tahk (2007) have recently demonstrated the ability to join parts of opinions allows for the viability of the median voter model even in the presence of a multidimensional issue space.

These works, however, each treats issues as *ex ante* determined. This is perhaps unsurprising, given prior work on the absence of issue creation on the Court (Epstein, Segal and Johnson 1996). Justices, however, have choice over which issues to emphasize and may shift the emphasis of a case to a more strategically appropriate one. Losing justices rationally attempt to shift the frame of cases, and that attempt must be met by the majority opinion (Lax and Cameron 2007). The majority opinion therefore reflects additional complexity as a function of the dissent. While research has examined the presence of multiple dimensions and ascribed to this responsibility for separate opinions, the causal arrow may in fact be flipped. Dissents generate complexity, and force the majority to address underlying issues in cases which they would rather avoid. Thus, the inconclusive findings in prior research are in part a function of overlooking the influence which dissenting opinions have in the opinion crafting process.

Work by Benesh and Spaeth (2007) is illustrative of the standard view; the authors test whether "justices may dissent not only because of attitudinal divergence (which we obviously think weighs very heavily on their decision) but also because of disagreements with the majority about what the case is about" (758). In particular, they focus on the choice to join the majority and write or join a concurring opinion, or to instead defect and author or join a dissenting opinion. Their evidence indicates when justices disagree over case frame, they are more likely to dissent, but they state that such disputes do not rise to the level of being "substantively important because of the impressive and overwhelming agreement across justices as to the legal definition of a case" (766). Though they find evidence case frame matters in the decision to dissent, they argue it is not of great importance because – in

absolute numbers – there are so few instances in which the justices disagree as to case frame. Two aspects deserve attention. First, the authors conclude justices almost universally agree on issue. Second, both of the above aspects are further supported by work suggesting the Court disfavors "creating" issues not in the legal record (Epstein, Segal and Johnson 1996). Though anecdotal evidence suggests the justices may occasionally reach to issues not raised on the record of the case, this does not appear to be the norm. Looking at the litigants' briefs, Epstein, Segal and Johnson (1996) find where prior authors had suggested the justices had engaged in issue creation (e.g., McGuire and Palmer 1996), the issue had already been raised in the briefs. Thus, the authors argue that the *sua sponte* doctrine is an entrenched norm on the Court, and that the justices rarely raise issues not on the record.

Both of these aspects, however, are consistent with the alternative perspective I have outlined above *so long as the majority responds to the dissent.* In the first place, only if the majority did not address the issue raised by a dissent would the authors have concluded that the dissent arose from differences as to the issue of the case. Recent work has suggested this is an unrealistic assumption (Lax and Cameron 2007). Instead, the majority should be expected to respond in order to maintain their status as the majority and to avoid defections. In the second place, the *sua sponte* doctrine may discourage the creation of issues not raised in the record, but rational litigants – seeking to win the case – are likely to have raised all potentially-winning arguments. Indeed, the herestheticalmaneuvering of the litigants (Wedeking 2010) would seem to obviate the need for justices to create issues; at least one of the litigants will have carried out the task for them. Thus, the strategy of the litigants, and their emphasis on potential winning dimensions, clears the path for the justice to address any or all of these multiple dimensions while still respecting the norm of the Court. They may emphasize, in other words, any one of many potential dimensions in order to attract a majority of the Court. Moreover, research would still document respect for the *sua sponte* doctrine, as the issues had been raised in at least one litigant brief (Epstein, Segal and

Johnson 1996).

Such strategic emphasis of issue frames by political actors, including Supreme Court justices, is well-documented in a large body of literature. Work by Riker (1984; 1986; 1996) argued presumed losers should be seeking to shift the frame to one more favorable. With regards to the Supreme Court, evidence of such heresthetical maneuvering has been documented in the litigants briefs (Wedeking 2010), at oral arguments (Black, Schutte and Johnson 2013), and in conference (Epstein and Shvetsova 2002). As one example of maneuvering, justices have the option to differentiate the grounds on which to base the decision; Spiller and Spitzer (1992) describe the potential strategic benefits derived from shifting from constitutional grounds to non-constitutional grounds or vice-versa. Research has also indicated, at least in separation of powers studies, such strategic elements may be present (see, e.g., Epstein, Knight and Martin 2001, King 2007) and Spiller and Spitzer (1992) provide a wealth of anecdotal cases to illustrate said dynamics. Moreover, all members of the Court can threaten these grounds as, "a justice offered a choice between two unpalatable alternatives can offer hew own opinion at any time, potentially splitting the majority coalition" with "choices . . . not limited to joining one of two alternative opinions, as is assumed in most models of the Court" (Anderson and Tahk 2007, 813).

Testable Implications

This description of prior work offers guidance for developing an approach to empirically differentiate whether or not justices strategically emphasize particular issues in the opinion-writing process. The strategic emphasis perspective provides a series of testable implications which, by leveraging the content of majority and separate opinions, we can analyze to understand the constraining effects of opinion-writing and bargaining on the Court. In particular, I argue two characteristics of the linguistic content of opinions – their topic concentration (or lack thereof) and how topically similar one opinion is to another – provide a testing ground

for the empirical predictions of the strategic emphasis perspective. These two implications are as follows.

First, increases in the number of dissents in a case should correlate with a decrease in the topic concentration of the majority opinion. With more dissents, more efforts to introduce additional topics should lead the majority to adjust, and to address those topics so as to avoid losing vulnerable members. Of course, one could also explain this pattern (as others have suggested in prior work) by stating that the two correlate because dissents are a function of topic concentration; that is, more dissents are likely when cases feature multiple issues on which the justices may disagree. Because of mixed findings in prior research (e.g., Wahlbeck, Spriggs and Maltzman 1999, Benesh and Spaeth 2007), whether or not dissents actually lead to changes in the majority opinion must be initially established.

Second, given that the number of dissents *does* correlate with the concentration of the majority opinion, one can differentiate the two processes by examining the topic similarity of the majority and separate opinion. In particular, I argue dissenting opinions directly contribute to multiple dimensions. Such a dynamic results from the losing justice choosing to strategically emphasize different issue frames. This strategy necessitates response from the majority opinion, leading to less concentrated majority opinions. Importantly, from this perspective, the utility of such a strategy is directly a function of the ideological distance between the separate opinion author and the *closest member of the majority*. As the distance increases, the strategic separate opinion author should seek to shift the frame of the case in order to attract the nearest members (Lax and Cameron 2007). Conversely, the standard approach – holding that dissents are a function of the multiple issues in the case – suggests the similarity is a function – if anything – of the distance to the *opinion author*. Because the number of issues is pre-determined, disagreement as to frame exists because of ideological differences. Thus, by examining whether the similarity of a separate opinion with the majority opinion is a function of ideological distance to the opinion author (standard approach) or

the nearest member of the majority (strategic approach), I gain traction on whether issues are determined *ex ante* or are instead a function of the competition among justices.

In the remainder of this paper, I move to testing these implications in turn. To do so, I utilize a standard form of topic modelling to generate unsupervised measures of the content of judicial opinions. I argue that these measures, which reflect only variation in the language used across judicial opinions, can then be used to more appropriately analyze the concentration of an opinion on a singular topic, and how similar two opinions are to one another. This permits direct tests of the strategic issue framing in Supreme Court opinion writing, and the constraining influence of that strategy on majority opinions.

Data and Research Design

Prior work has utilized the issue codes of the Supreme Court Database [SCD] (Spaeth 2011) in order to identify differences in issue frames across opinions. Utilizing the SCD measure indicates that in only "approximately 1% of all votes over the Warren, Burger, and Rehnquist Courts," and in just over 5% of all instances of a justice joining or authoring a separate opinion, was there at least one issue deviation (Benesh and Spaeth 2007, 761). Thus, the measure indicates differences over the issue frame are exceedingly unlikely. Moreover, where the authors do identify an issue deviation, they describe it as *issue additions*, or instances where "justices considered additional issues to those considered by the majority" (Benesh and Spaeth 2007, 761).

While the SCD codes have been widely employed in prior research, many alternatives are now available. For instance, recent work by Boydstun et al. (N.d.) proposes unified methods of frame discovery across contexts of interest to political science. In particular, they build on work by Blei, Ng and Jordan (2003), Blei and McAuliffe (2007), and Blei et al. (2003) and propose a variant of hierarchical and supervised latent Dirichlet allocation (LDA)

which incorporates both hierarchical and supervised elements. While a useful step in media framing research, such an approach is not as useful for this particular research project; here, the emphasis of particular issue frames could vary greatly and would not necessarily follow the nesting structure imposed by a hierarchical framework, and there are few variables that would prove particularly informative for supervised models.

Furthermore, that additional structure would offer little of value given the hypothesized dynamics of interest. To wit, of particular concern are the distributions of topics within documents (topic concentration) and the similarity of topic distributions between two documents (topic similarity). But with that said, in both cases, standard LDA-based topic models (Blei, Ng and Jordan 2003) provide sufficient information, and have previously been utilized to study similar research questions. These models rely on the insight that the co-occurrence of terms across documents yields information on latent topics. For instance, Hall, Jurafsky and Manning (2008) used unsupervised LDA and analyses of distributions across topic proportions in order to study "the history of ideas" across nearly 30 years of research in computational linguistics. I therefore utilize LDA, and fit the model using collapsed Gibbs sampling (Griffiths and Steyvers 2004, Heinrich 2008, Phan, Nguyen and Horiguchi 2008).

I create a document-term matrix, with a row representing document j and a column representing term i. The matrix includes both majority and separate opinions. All capitalization, punctuation[1] and numeric characters were removed. Only the most frequent 10,000 terms were retained.[2] Though unsupervised LDA has the benefit of generally imposing little structure on the corpus, it requires *a priori* specification of the number of topics (k) and *a*

[1]All punctuation was removed with the exception of intra-word hyphens, which potentially preserves informative hyphenated terms

[2]One alternative would be to use term-frequency inverse document frequency (tf-idf) scores (Blei and Lafferty 2009) to determine which words to retain, but research has begun

priori specification of α, the model hyperparameter for topic proportions, the latter of which influences the models tendency to characterize a document as arising from a single or many topics.[3] I report estimates below from models utilizing k =25 and k =100 topic models, and for each set α equal to $\frac{\alpha}{k}$, per the recommendation of Griffiths and Steyvers (2004).

[include Figure 1 about here]

To gauge the validity of the estimated topics, I present the topic proportions from the 25 topic LDA against the assigned issue area from the Supreme Court Database in Figure 1, and for the 100 topic LDA in Figure 2. To assign topic names, I compute the most likely terms for each topic, then concatenate the three most likely terms as the topic name. The figures provide immediate evidence that the estimated topic dimensions are generally recognizable areas of concern. Take, for instance, the "employees, labor, union" LDA topic in Figure 1, which falls almost entirely into the SCD issue area of Unions. Likewise, some issue areas are composed of many subtopics. Here, the Criminal Procedure issue area is marked my multiple LDA topics, including topics which represent such concepts as the Fourth Amendment search and seizure right, Sixth Amendment right to counsel, and the death penalty. In the 100 topic model, all of the SCD issue areas represent an amalgam of different estimated topics.

Given the above demonstrates the convergent validity of the LDA topics with the Supreme Court Database issue area codes, one may ask what is gained by using the unsupervised topic

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to suggest that this pre-processing step itself begins to impose a topical structure on the document and obscures potentially important variations.

[3]Note that this parameter is constant across documents. Thus, in comparing documents – as in the following analyses – the choice of the parameter should not affect inference as the case specific scores are relative only to one another. That said, comparing the measures across different implementations which utilize different α values could lead to serious problems.

models.[4] On this, five benefits demand particular attention. First, the SCD historically has sought to assign only a single issue to a case, only rarely assigning a second issue. As Shapiro (2009) documents in an extensive recoding project, that preference may have important consequences for research, as there is a prevalence of additional issues discussed in cases but not reported in the SCD. To utilize the SCD issues to analyze any subject involving the potential of multiple issues therefore hearkens to the criticism Epstein, Segal and Johnson (1996) raise of McGuire and Palmer (1996): the measurement strategy begets the results. Second, the validity of the issue codes in the SCD have been called into question. Harvey and Woodruff (2011) found evidence that the issue code was occasionally assigned in a manner that suggested it was chosen in order to make sense of the ideological alignment of the Court; that is, multiple issues may have been present, but the assigned issue was the one which best predicted the ideological split of the Court. Third, the SCD measures are not continuous. Rather, they are explicitly coded on the basis of the topic on which the case was disposed. Such a measure might be reasonable if we believe the case is decided on a single dimension; if we believe the justices discuss and decide a multiplicity of issues, the measure surely obscures a tremendous amount of variation of interest. Fourth, and as a result of the above, any measure of topic concentration is incredibly coarse. By emphasizing the dichotomization of issues, and by giving preference to assigning a single issue to each case, any measure of topic concentration could take on only a very limited number of values, with the overwhelming majority indicating perfect topic concentration (i.e., only one topic). Fifth, and similarly to topic concentration, any measure of topical similarity is destined to be extremely coarse. In fact, this is demonstrated in Benesh and Spaeth (2007) in their

[4]For more on the different forms of validity for consideration in measurement, see Quinn et al. (2010). Here, convergent validity simply refers to the fact that the new measure demonstrates some consistency with the most widely-used prior measure.

reporting of issue deviations (or disagreement as to the issue of the case). That measure contains only 5 unique values for 10,023 total observations, of which 9,509 take on the value of 0, and 9,989 take on values of 0 or 1. In short, the measure is virtually a dichotomy, from which we are destined to conclude – as Benesh and Spaeth (2007) do – that the opinions are all topically similar.

[include Figure 2 about here]

The topic modelling approach overcomes each of these limitations. First, rather than assigning one topic, the model assigns a probabilistic assessment of the proportion of each document represented by each topic. Second, the model is unsupervised; while this generates concerns as to establishing the validity of individual topics (Grimmer and Stewart 2013), no confirmation bias may creep into the selection of a topic for a particular case. Given those points, it bears emphasis that these topics result not from human-assigned dichotomies of previously identified issues; rather, these topics are constructed solely from the actual words the justices use in their opinions, and the dimensions which most accurately reflect the underlying variation in that word use. Third, each topic is represented within any single document by a proportion between 0 and 1; thus, we have a continuous measure of the amount of attention devoted to each individual topic in a particular opinion. With that continuous measure of the variation in word use, estimation of measures of topic concentration and document similarity are straightforward. I move to these in turn.

Dissenting Opinions and Topic Concentration

The dissenting justice, facing a loss on the merits, should introduce and emphasize new issue frames. Given their respective utilities, each dissent may rationally introduce new topics and the majority opinion author should similarly rationally respond (Lax and Cameron 2007).

In the first place, then, we should observe the number of dissents correlated with increases in the number of topics addressed by the majority. As Lax and Cameron argue, separate opinion authorship should necessarily inflate the quality of the majority as the opinion author seeks to head off the influence of dissents on drawing away the nearest member. The dependent variable for this analysis is therefore the topical concentration of the majority opinion.

In utilizing LDA, one output is a probabilistic assessment of the topic distribution for each document. This distribution can be thought of as similar to a host of distributions of interest through social science research; consider, for instance, market shares within an industry. That being the case, one widely-utilized method for estimating the concentration of these shares for each individual observation is to calculate a normalized Herfindahl index (Hirschman 1970).

The index is estimated as:

$$C_i = \frac{\sum_{k=1}^{k} \hat{\pi}_i^2 - (1/k)}{1 - 1/k} \tag{1}$$

where k is the number of topics, and $\hat{\pi}_i$ is the proportion of a topic captured in a given document. The index takes on values between 0 and 1, with lower values indicating that the opinion is less concentrated on one topic, and higher values indicating the opinion is more concentrated on a single topic.

Independent Variables

The data encompass all majority opinions between 1955 and 2009, and the number of dissents in a case is the primary independent variable of interest. Prior research has split on how the number of dissents should relate to the concentration of the majority opinion. Though Benesh and Spaeth (2007) find that justices are more likely to join the majority in complex cases, or cases with more than one legal provision others have documented that

more complex cases are more likely to feature separate opinions (e.g., Wahlbeck, Spriggs and Maltzman 1999). Note, however, that both hold that dissents are a function of the topic concentration of the case. I argue instead that dissents contribute to the complexity of the case by emphasizing new issue frames. Yet – given mixed findings in prior research – this requires establishing that the number of dissents correlates with the concentration of the majority opinion. I therefore include a variable indicating the number of dissenting opinions in each case during the time period under study.

I also include the following control variables. Prior research has frequently implicated the SCD's legal provision variable as a measure of case complexity (e.g., Wahlbeck, Spriggs and Maltzman 1999, Benesh and Spaeth 2007). As Benesh and Spaeth (2007) note, a legal provision is coded as the "constitutional provision, statute, or court rule or rules considered by the justice" (759). To the extent that there are multiple, exogenously determined legal provisions, one would expect that the Court's majority opinion should be less concentrated; addressing multiple legal provisions would seemingly decrease the topical concentration of the majority opinion. I therefore include the number of legal provisions in a case, as coded by the SCD, and expect a negative effect on topic concentration. Opinion majorities are not all equally strong. All else equal, larger majority coalitions would be able to address a broader range of issues, leading to less concentrated majority opinions. Moreover, the dynamic is highly correlated with the number of dissenting opinions. Thus, I control for the size of the majority by including the number of majority votes, and expect that as the size of the majority increases, the topical concentration of the majority opinion decreases. Conversely, lengthy opinions are likely to appear more concentrated on a few topics. This may seem counterintuitive at first, but recall that topic concentration is a relative measure of the percentage of the case devoted to how divided the case is across multiple topics. To the extent the majority opinion seeks to conclusively establish one particular area of law, and thus discusses the area in great length within the opinion, the opinion would appear

more concentrated. Therefore, I include the log of the word counts as a measure of opinion lengths, and hypothesize that longer separate opinions are more likely to be similar to the majority opinion. Finally, case salience has been demonstrated to matter across a variety of judicial behaviors (e.g., Brenner and Palmer 1988, Unah and Hancock 2006). Here, the importance or salience of the case may influence topic concentration, as justices write higher quality opinions when recognizing the decision is of greater visibility. While prior research has frequently employed Epstein and Segal's (2000) measure of whether or not the decision was covered on the front page of *The New York Times* the day after the decision, such an approach raises problems for temporal causality. Recent advances have expanded the measure to cover multiple newspapers and across a range of time after the decision but, most critically, also *before* the decision (Clark, Lax and Rice 2015). Therefore, I use the Clark, Lax and Rice (2015) latent salience measure, and estimate latent salience according to media coverage *prior* to the decision.

As the dependent variable is a continuous random variable in (0,1), I utilize beta regression. Beta regression models are appropriate for modelling rates or proportions (Ferrari and Cribari-Neto 2004), and are preferable to linear models which can lead to predictions outside the unit interval. In order to address heterogeneity across opinion authors, the model also includes fixed effects for justice.

Results

I present the results – which are consistent across specifications – in Table 1. As can be seen from the results, a primary correlate of the topic concentration of a majority opinion is the number of dissents. These results thus buttress the intuition and findings of prior scholars (Wahlbeck, Spriggs and Maltzman 1999), and provide initial evidence suggesting the strategic importance of dissenting opinions in shaping the opinions of the Court. To wit,

the analysis suggests that increases in the number of dissents are associated with negatively and statistically significant decreases in the topic concentration of majority opinions.

[include Table 1 about here]

The substantive effect of the relationship is demonstrated in Figure 3. The y-axis in both panels of the figure represent the range between one standard deviation below and one standard deviation above the mean for both the 25 topic measure of topic concentration (left panel) and the 100 topic measure (right panel). Moving from cases with no dissenting opinions to cases with four dissenting opinions, I observe a marked and statistically significant decrease in the concentration of the majority opinion. Moreover, the pattern is nearly identical across models, indicating the results are robust to choices of the number of topics.

[include Figure 3 about here]

These findings provide initial empirical evidence to suggest the number of dissents relates to the content of the majority opinion. They also provide initial support for the Lax-Cameron model, which suggests that the improved quality and increased moderation of the majority opinion is a function of the quality of the separate opinion. Here, with separate opinions potentially drafted so as to emphasize a different dimension on which the separate opinion author may hope to realign the Court, the majority opinion author would necessarily have to draft a less concentrated majority opinion. Thus, the majority opinion is less concentrated in order to retain the median justice, and Benesh and Spaeth's observation that separate opinions most typically attempt to "add" issues is a function of the effort to split that majority.

Topical Similarity of Separate Opinions

Yet one may also argue that the above is simply a function of the complexity hypothesis. As the cases become more complex, it is more likely the justices would fail to reach a consensus, and thus we observe increases in the number of dissents. If the number of issues is treated as a constant, the division (or the number of dissents) is driven by the very fact that the case addresses a multitude of issues. Thus, I turn in this section to disentangling these dynamics. We can assess this argument by looking at the similarity of dissenting opinions. If separate opinions lead to decreases in topic concentration, it should be as a function of new topics being introduced in dissenting opinions. Importantly, though, the Lax and Cameron theory also holds that we should observe the emphasis on different frames increase as we get further away ideologically from the nearest member of the coalition, while the standard "difference in ideas" story would hold that it's the opinion author.

Prior work examining the topical similarity of majority and separate opinions has utilized the SCD's issue codes but, as detailed above, these codes are potentially problematic. Shifting to unsupervised topic models allows one to construct a measure of the similarity of topic distributions between two documents. Because the topics are ultimately defined by the words the justices themselves choose to use, such a measure offers an untainted picture of the similarity of the language used in two documents.

The similarity between two documents a and b is estimated as:

$$S_{a,b} = \sum_{k=1}^{k} \left(\sqrt{\hat{\theta}_{a,k}} - \sqrt{\hat{\theta}_{b,k}} \right)^2 \tag{2}$$

where $\hat{\theta}_{a,k}$ is the proportion of topic k captured in document a and likewise for document b. Because the similarity scores are based on the difference between the documents, higher scores indicate greater differences, and lower scores equal more similar opinions.

Independent Variables

For this analysis, the data encompass all separate opinions authored between 1955 and 2009. The theory outlined above suggests the losing justices make an effort to shift the dimension on which the case is decided. The utility of this strategy – given the costs of opinion writing – is a function of the justice's distance from the nearest member of the majority. If they are able to attract that member, they are better positioned to build a new opinion coalition. The utility of a new issue dimension should decrease the closer they are to the closest member of the majority coalition, as resorting to a reframing of the case is more likely to lead to less optimal outcomes if they are already near the majority. On the other hand, the greater the distance from the closest member, the more likely they are to resort to reframing the case; by reframing, they may be able to generate a new coalition of justices that better reflects their preferences. Note that – counter to the standard view of dissents – the distance to the majority author should have little influence; they will not be able to emphasize a frame in order to change the author's vote, as they author can simply modify the content of the majority opinion. Therefore, the ideological distance variables offer a direct assessment of whether the concentration of the majority opinion is a function of the standard view of dissents or a strategic emphasis on issues by the dissenters.

I calculate the ideological distance from the closest majority member and from the opinion author using Martin and Quinn (2002) scores. The measures are equal to the absolute value of the distance between the Martin-Quinn score of the dissenting opinion author and the Martin-Quinn score of the nearest member of the majority or the opinion author, respectively. Given the above, I expect that as the distance between the dissenting and nearest member of the majority increases, we should see increases in the dissimilarity measure. Conversely, as the distance between the dissenting justice and the majority opinion author increases, we should see no change in the similarity of opinions.

I again control for potentially confounding variables. Each warrants a brief discussion.

First, I again expect the size of the majority to influence the observed behavior. One might expect, for instance, that larger majorities do not feel the need to address the concerns of the minority (Wahlbeck, Spriggs and Maltzman 1998; 1999), and thus the opinions are more dissimilar. I therefore include a measure of the number of majority votes in the case. Second, longer dissenting opinions may be more similar to majority opinions, as the additional length may increase the probability of the separate opinion addressing the same topics as the typically lengthier majority opinion. Therefore, I include the log of the word counts as a measure of opinion lengths, and hypothesize that longer separate opinions are more likely to be similar to the majority opinion. Third, we may expect – and indeed the standard perspective would explicitly argue – that dissenting opinions would be more dissimilar as a function of the number of legal provisions at issue in the case. I therefore include the count of the number of legal provisions addressed by the majority opinion, but given my argument expect a null result. Finally, I include the measure of pre-decision salience in order to account for potential changes associated with high salience cases. As the dependent variable is again a continuous random variable in (0,1), I utilize beta regression. I also once again address heterogeneity across opinion authors by including fixed effects for opinion authors.

Results

I estimate separate models for each of regular concurrences, special concurrences, and dissenting opinions for similarity scores based on a 25 topic LDA and a 100 topic LDA. The results appear in Table 2. Comparisons across models provide a robustness check on the observed dynamics, as the relationships should theoretically differ by opinion type. Across analyses, only opinion length has a consistent influence on the similarity of the three types of separate opinions with the majority. The negative, statistically significant coefficient indicates that the longer a separate opinion becomes, the more similar the topical distribution is to the majority opinion. Such a result is intuitive; the more a justice writes, the more likely

they are to address the topics addressed in the majority opinion. As for salience, we see that pre-decision salience yields dissenting opinions that are more dissimilar than majority opinions. Such a result comports with the underlying logic of Riker and Lax and Cameron; the author is more willing to accept the costs of writing an opinion, and is more willing to use all available tools, including heresthetical maneuvering, to seek to re-align the case when the issue is important. The number of legal provisions is not statistically significant across models, but is positive and statistically significant in both models of regular concurrences. Again, the result is intuitive; a regular concurrence generally "agrees with both the disposition and the legal reasoning contained in the majority opinion, but it highlights a point, discusses a related topic, or expands on the majority's logic" (Wahlbeck, Spriggs and Maltzman 1999, 490). Thus, in cases with higher numbers of legal provisions, we would expect to see regular concurrences more frequently address "a related topic" and thus yield more dissimilar opinions. Interestingly, the number of legal provisions falls short of statistical significance in both models of dissenting opinions however, suggesting that dissenting opinions in cases with more legal provisions are no more or less topically similar to the majority opinion. This result directly contradicts the standard perspective, wherein increases in dissents may accompany increases in the number of issues.

[include Table 2 about here]

But most important to this analysis are the ideological distance variables, and there I find strong evidence of strategic issue emphasis in dissenting opinions. To wit, in not one of the six models does the ideological distance to the majority opinion author have a statistically significant relationship with the similarity of the separate opinion. In contrast, the distance to the closest member of the majority is significantly related to the similarity of the dissenting opinion with the majority opinion in both dissenting opinion models, exactly as anticipated if the justices strategically emphasized issues not addressed by the majority. The farther the

author of a dissenting opinion is from the closest member of the majority, the less similar are the opinions. Moreover, the pattern is observed only for dissenting opinions; no effect is observed across other types of separate opinions. The result is thus entirely consistent with what would be expected from a strategic perspective; the farther away a loser is from the majority, the more likely they are to attempt to re-align the Court by emphasizing different issue dimensions for the case at hand. The substantive effect is demonstrated in Figure 4, where I plot the predicted value of dissenting and majority opinion similarity (y-axis) across the range of ideological distance to the closest member of the majority (x-axis).

[include Figure 4 about here]

These findings provide empirical evidence in support of the theory of strategic issue emphasis outlined above, as well as the comparative statics derived in the formal model of opinion assignment and bargaining proposed by Lax and Cameron (2007). There, the authors propose that an increase in the distance between the ideological preferences of the majority opinion assignee and other justices leads to an increase in the willingness of the distant justice to bear the costs of writing a winning counteropinion. They must emphasize, though, a dimension on which they could conceivably derive a winning coalition. But because the distant justice has decided to bear the costs of writing a counteropinion, "[t]he greater willingness of a more extreme opponent to contest the assignee's opinion forces the assignee to craft a more moderate, higher quality opinion than he/she otherwise would" (Lax and Cameron 2007, 291). In other words, the separate justice's willingness to draft the opinion generates improvements in the majority opinion; with separate opinions drafted so as to emphasize a different dimension on which the separate opinion author may hope to realign the Court, the majority opinion author would necessarily have to add a response to the majority opinion. In the first test, we observe evidence of exactly this behavior: majority opinions are less concentrated as a function of the number of dissents.

The result also comport with the implications derived in Anderson and Tahk (2007), who argue the ability of the majority opinion author to manipulate outcomes through agenda influence is bounded to periods where the costs of writing separately are high (819). Where the separate opinion writer is unwilling to draft an opinion, the majority opinion author has a greater ability to determine the issue dimensions to address, leading to more concentrated majority opinions when there are no separate opinions. As the costs of writing separately become more reasonable, the majority opinion author has less control over the issue dimensions of the case, and must write the opinion so as to maintain control of the majority coalition. This entails addressing efforts to shift the issue dimension; disposing of a new issue mitigates the probability that susceptible members of the majority may defect.

Discussion and Conclusion

Prior research concluded U.S. Supreme Court justices overwhelmingly agree as to the legal issue presented in a case, and therefore divided almost exclusively according to their preferred outcome on that issue. In this article, I have presented evidence that such a conclusion is mistaken; rather, justices strategically emphasize different issue frames according to their interests in the case. Giving preference to assigning few issues, and failing to recognize the fluidity of issue emphases, led prior work to reasonably conclude there are few issue disagreements, and where they arose was a function of the case. By accounting for the continuous nature of the issue focus of opinions, and by directly examining the similarity of opinions, this analysis instead demonstrates that bargaining over issues is an important component in the content of judicial opinions, and the development of the law.

In this conclusion, it is worth emphasizing the above offers a rather conservative test of strategic issue emphasis in opinion writing, and quite probably underestimates the amount of maneuvering justices would engage in during this process. Because justices occasionally

choose not to publish drafted opinions, and frequently threaten to write separately but do not follow through, there is likely more unobserved maneuvering than is captured in simply analyzing the resulting opinions, reported and presented to the public.

Beyond immediate implications, these results also speak to the persistence of the *sua sponte* norm at the Court. While other well-established norms have broken down over time (e.g. Epstein, Segal and Spaeth 2001), the *sua sponte* norm appears well-entrenched (cf. McGuire and Palmer 1996). Yet with the institutional protections accorded the Court, they have resisted the urge to consistently stray from the issues directly raised by the case at hand. The results suggest this persistence is partially attributable to the Court's bargaining process, embedded in appellate review, as justices emphasize issues strategic litigants have already raised. Such an insight has been discussed in prior work (e.g., Maltzman, Spriggs and Wahlbeck 2000), but I offer a robust test of the implied dynamics. The finding has important implications for American politics, as it reveals the constraining influence of legal process at the Court.

Having documented this strategy in opinion writing, an important next step is to examine the movement of opinion *drafts*. Just as scholars have made significant progress in understanding bargaining by looking at the number of drafts in the past (e.g., Wahlbeck, Spriggs and Maltzman 1998), one could conceivably look to the drafts to see how dissimilar separate opinions precipitate changes in the majority opinion drafts. My analysis suggests similar topical distributions for dissenting opinion drafts would lead to less modifications (and, likewise, more concentrated) majority opinions, closer ideological distance between the separate opinion author and the nearest member of the majority coalition would lead to separate opinions that reflected similar topical distributions, and increases in that distance would lead to much different topic distributions. The above provides the framework for this future analysis.

References

Anderson, Robert and Alexander Tahk. 2007. "Institutions and Equilibrium in the United States Supreme Court." *American Political Science Review* 101(4):811–825.

Benesh, Sara and Harold Spaeth. 2007. "The Constraint of Law: A Study of Supreme Court Dissensus." *American Politics Research* 35(5):755–768.

Black, Ryan, Rachel Schutte and Timothy Johnson. 2013. "Trying to Get What You Want: Heresthetical Maneuvering and U.S. Supreme Court Decision Making." *Political Research Quarterly* 66:819–830.

Blei, David, Andrew Ng and Michael Jordan. 2003. "Latent Dirichlet Allocation." *Journal of Machine Learning Research* 3:993–1022.

Blei, David and John Lafferty. 2009. Topic Models. In *Text Mining: Classification, Clustering, and Applications*, ed. A Srivastava and M Sahami. Chapman and Hall/ CRC Press.

Blei, David M. and Jon D. McAuliffe. 2007. Supervised Topic Models. In *Neural Information Processing Systems*.

Blei, David M., Thomas Griffiths, Michael Jordan and Joshua Tenenbaum. 2003. Hierarchical topic models and the nested Chinese restaurant process. In *NIPS*.

Boydstun, Amber, Justin Gross, Philip Resnik and Noah Smith. N.d. "Evolutionary Frames: Using Semi-Automated Text Analysis to Track the Development of Media Frames within and across Issues." Working Paper.

Brenner, Saul and Jan Palmer. 1988. "The Time Taken to Write Opinions as a Determinant of Opinion Assignments." *Judicature* 88:179–184.

Caldeira, Gregory and Christopher Zorn. 1998. "Of Time and Consensual Norms in the Supreme Court." *American Journal of Political Science* 42:874–902.

Clark, Tom, Jeffrey Lax and Douglas Rice. 2015. "Measuring the Political Salience of Supreme Court Cases." *The Journal of Law and Courts* 3(1):37–65.

Epstein, Lee and Jack Knight. 1998. *The Choices Justices Make*. Washington, DC: Congressional Quarterly.

Epstein, Lee, Jack Knight and Andrew Martin. 2001. "The SUpreme Court as a Strategic National Policy Maker." *Emory Law Journal* 50(2):583–611.

Epstein, Lee and Jeffrey Segal. 2000. "Measuring Issue Salience." *American Journal of Political Science* 44(1):66–83.

Epstein, Lee, Jeffrey Segal and Harold Spaeth. 2001. "The Norm of Consensus on the U.S. Supreme Court." *American Journal of Political Science* 45(2):362–377.

Epstein, Lee, Jeffrey Segal and Timothy Johnson. 1996. "The Claim of Issue Creation on the U.S. Supreme Court." *The American Political Science Review* 90(4):845–852.

Epstein, Lee and Olga Shvetsova. 2002. "Heresthetical Maneuvering on the U.S. Supreme Court." *Journal of Theoretical Politics* 14(1):93–122.

Ferrari, Silvia and Francisco Cribari-Neto. 2004. "Beta Regression for Model Rates and Proportions." *Journal of Applied Statistics* 31(7):799–815.

Gerber, Scott and Keeok Park. 1997. "The Quixotic Search for Consensus on the U.S. Supreme Court: A Cross-Judicial Empirical Analysis of the Rehnquist Court Justices." *American Political Science Review* 91(2):390–408.

Griffiths, Thomas and Mark Steyvers. 2004. "Finding Scientific Topics." *Proceedings of the National Academy of Sciences* 101(1):5228–5235.

Grimmer, Justin and Brandon Stewart. 2013. "Text as Data: The Promise and Pitfalls of Automatic Content Analysis Methods for Political Texts." *Political Analysis* 21(3):267–297.

Groffman, Bernard and Timothy Brazill. 2002. "Identifying the Median Justice on the Supreme Court through Multidimensional Scaling." *Public Choice* 112:55–79.

Hall, David, Daniel Jurafsky and Christopher Manning. 2008. Studying the History of Ideas Using Topic Models. In *Conference on Empirical Methods in Natural Language Processing*.

Hand, Learned. 1958. *The Bill of Rights*. Harvard University Press.

Harvey, Anna and Michael Woodruff. 2011. "Confirmation Bias in the United States Supreme Court Judicial Database." *The Journal of Law, Economics, and Organization* .

Heinrich, Gregor. 2008. Parameter Estimation for Text Analysis. Technical report University of Leipzig.

Hendershot, Marcus, Mark Hurwitz, Drew Lanier and Richard Pacelle. 2013. "Dissensual Decision Making: Revisiting the Demise of Consensual Norms within the U.S. Supreme Court." *Political Research Quarterly* 66:467–481.

Hirschman, Albert. 1970. *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations and States*. Cambridge, MA: Harvard University Press.

Howard, J. Woodford. 1968. "On the Fluidity of Judicial Choice." *American Political Science Review* 62:43–56.

King, Chad. 2007. "Strategic Selection of Legal Instruments on the U.S. Supreme Court." *American Politics Research* 35(5):621–642.

Lauderdale, Benjamin and Tom Clark. 2012. "The Supreme Court's Many Median Justices." *American Political Science Review* 106(4):847–866.

Lax, Jeffrey and Charles Cameron. 2007. "Bargaining and Opinion Assignment on the U.S. Supreme Court." *Journal of Law, Economics and Organization* 23(2):276–302.

Maltzman, Forest, James Spriggs and Paul Wahlbeck. 2000. *Crafting Law on the Supreme Court*. New York: Cambridge University Press.

Maltzman, Forest and Paul Wahlbeck. 1996. "Strategic Policy Considerations and Voting Fluidity on the Burger Court." *American Political Science Review* 90:581–592.

Martin, Andrew and Kevin Quinn. 2002. "Dynamic Ideal Point Estimation via Markov Chain Monte Carlo for the U.S. Supreme Court." *Political Analysis* 10(2):134–153.

Martin, Andrew, Kevin Quinn and Lee Epstein. 2005. "The Median Justice on the U.S. Supreme Court." *North Carolina Law Review* 83:1275–1322.

McGuire, Kevin and Barbara Palmer. 1996. "Issues, Agendas, and Decision Making on the Supreme Court." *American Political Science Review* 90(4):853–865.

Murphy, Walter. 1964. *Elements of Judicial Strategy*. Chicago: University of Chicago Press.

Phan, Xuan-Hieu, Le-Minh Nguyen and Susumu Horiguchi. 2008. Learning to Classify Short and Sparse Text and Web with Hidden Topics from Large-scale Data Collections. In *World Wide Web Conference*. Beijing, China: pp. 91–100.

Quinn, Kevin, Burt Monroe, Michael Crespin, Michael Colaresi and Dragomir Radev. 2010. "How to Analyze Political Attention With Minimal Assumptions and Costs." *American Journal of Political Science* 54:209–228.

Riker, William. 1984. "The Heresthetics of Constitution-making: The Presidency in 1787, with Comments on Determinism and Rational Choice." *American Political Science Review* 78:1–16.

Riker, William. 1986. *The Art of Political Manipulation.* New Haven, CT: Yale University Press.

Riker, William. 1996. *The Strategy of Rhetoric: Campaigning for the American Constitution.* New Haven, CT: Yale University Press.

Segal, Jeffrey. 1997. "Separation-of-Powers Games in the Positive Theory of Congress and Courts." *American Political Science Review* 91(1):28–44.

Shapiro, Carolyn. 2009. "Coding Complexity: Bringing Law to the Empirical Analysis of the Supreme Court." *Hastings Law Journal* 60:477–540.

Spaeth, Harold. 2011. "United States Supreme Court Database." http://scdb.wustl.edu == WUSTL(distributor).

Spiller, Pablo and Matthew Spitzer. 1992. "Judicial Choice of Legal Doctrines." *Journal of Law, Economics, and Organization* 8(1):8–46.

Unah, Isaac and Ange-Marie Hancock. 2006. "U.S. Supreme Court Decision Making, Case Salience, and the Attitudinal Model." *Law & Policy* 28(3):295–320.

Wahlbeck, Paul, James Spriggs and Forest Maltzman. 1998. "Marshalling the Court: Bargaining and Accomodation on the United States Supreme Court." *American Journal of Political Science* 42(1):294–315.

Wahlbeck, Paul, James Spriggs and Forest Maltzman. 1999. "The Politics of Dissents and Concurrences on the U.S. Supreme Court." *American Politics Quarterly* 27(4):488–514.

Walker, Thomas, Lee Epstein and William Dixon. 1988. "On the Mysterious Demise of Consensual Norms in the United States Supreme Court." *Journal of Politics* 50:361–389.

Wedeking, Justin. 2010. "Supreme Court Litigants and Strategic Framing." *American Journal of Political Science* 54(3):617–631.

Table 1: Effect of Dissenting Opinions on Topic Concentration

	25 Topics	100 Topics
(Intercept)	-0.866 (0.092)	-1.008 (0.070)
Number of Dissents	-0.012* (0.007)	-0.010* (0.005)
Number of Legal Provisions	-0.003 (0.002)	-0.004* (0.001)
Majority Votes	-0.009* (0.004)	-0.010* (0.003)
Word Count (logged)	0.042* (0.007)	0.038* (0.006)
Pre-Decision Salience	-0.009 (0.006)	0.006 (0.005)
Phi	17.03 (0.32)	32.70 (0.62)

Note: * = $p < 0.05$ (one-tailed). N=5,609. The dependent variable in these analyses is the topic concentration of the majority opinion.

Table 2: Effect of Ideological Distance on Topic Dissimilarity

	Regular	*Special*	*Dissent*
25 Topic LDA			
(Intercept)	0.515 (0.107)	0.474 (0.159)	0.291 (0.082)
Number of Legal Provisions	0.023* (0.008)	0.012* (0.007)	0.001 (0.002)
Distance from Majority Author	0.005 (0.007)	-0.002 (0.005)	-0.002 (0.002)
Distance from Closest Majority Member	-0.002 (0.01)	0.006 (0.010)	0.008* (0.005)
Majority Votes	0.003 (0.007)	0.012* (0.006)	0.001 (0.004)
Word Count (logged)	-0.138* (0.013)	-0.140* (0.010)	-0.135* (0.005)
Pre-Decision Salience	0.015 (0.014)	-0.007 (0.012)	0.023* (0.006)
Phi	15.604 (0.759)	20.053 (0.880)	22.597 (0.529)
100 Topic LDA			
(Intercept)	1.441 (0.212)	1.795 (0.295)	1.587 (0.162)
Number of Legal Provisions	0.029* (0.016)	0.016 (0.013)	0.003 (0.003)
Distance from Majority Author	-0.002 (0.014)	-0.008 (0.01)	<0.001 (0.005)
Distance from Closest Majority Member	0.029 (0.019)	0.009 (0.019)	0.017* (0.009)
Majority Votes	0.013 (0.014)	0.01 (0.012)	-0.002 (0.008)
Word Count (logged)	-0.255* (0.025)	-0.316* (0.019)	-0.322* (0.009)
Pre-Decision Salience	0.020 (0.027)	0.019 (0.022)	0.058* (0.012)
Phi	10.72 (0.560)	15.86 (0.685)	18.67 (0.430)

Note: * = $p < 0.05$ (one-tailed); Dissenting Opinions: N=3,601; Special Concurrences: N=1,014; Regular Concurrences: N=811. The dependent variable in these analyses is the similarity between the separate opinion and the majority opinion.

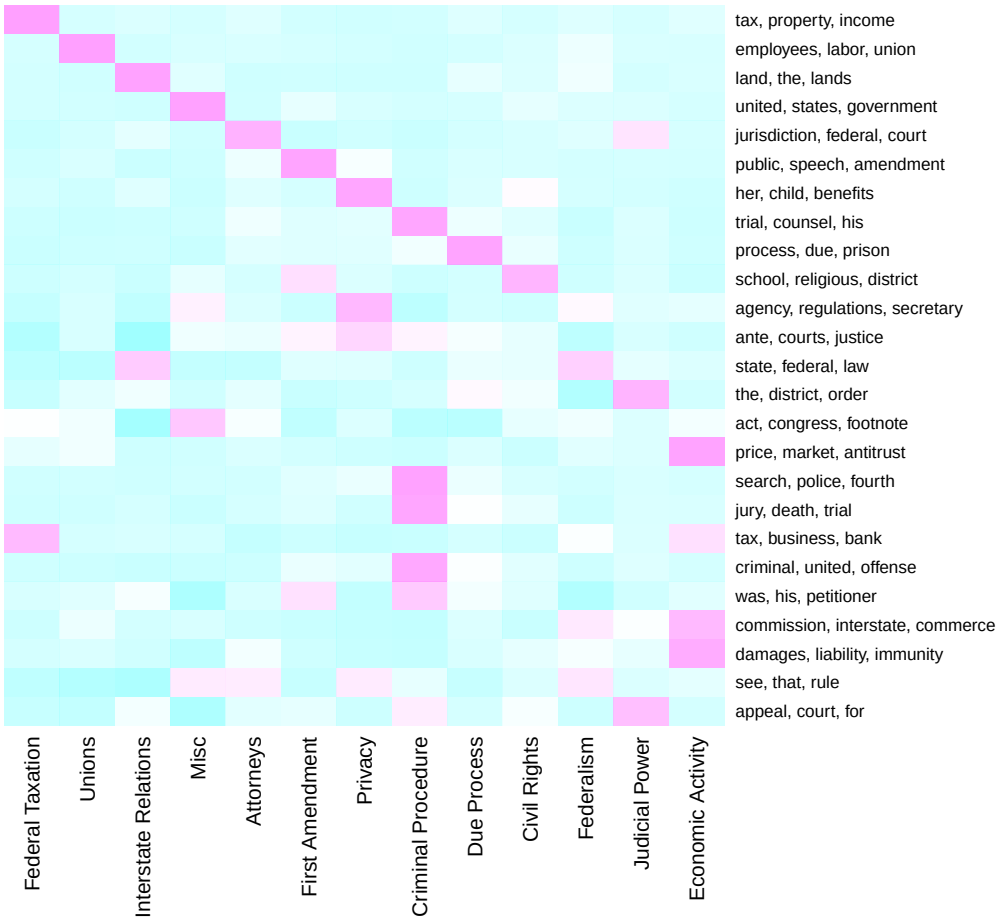

Figure 1: *Heatmap of 25 Topic LDA Topic Proportions By SCD Issue Codes* The heatmap is based on the average LDA topic proportion for each of the SCD issue areas. Darker, purple shades indicate greater values (i.e., higher topic proportions within that SCD issue area) while lighter, blue shades indicate smaller values (i.e., lower topic proportions within that SCD issue area).

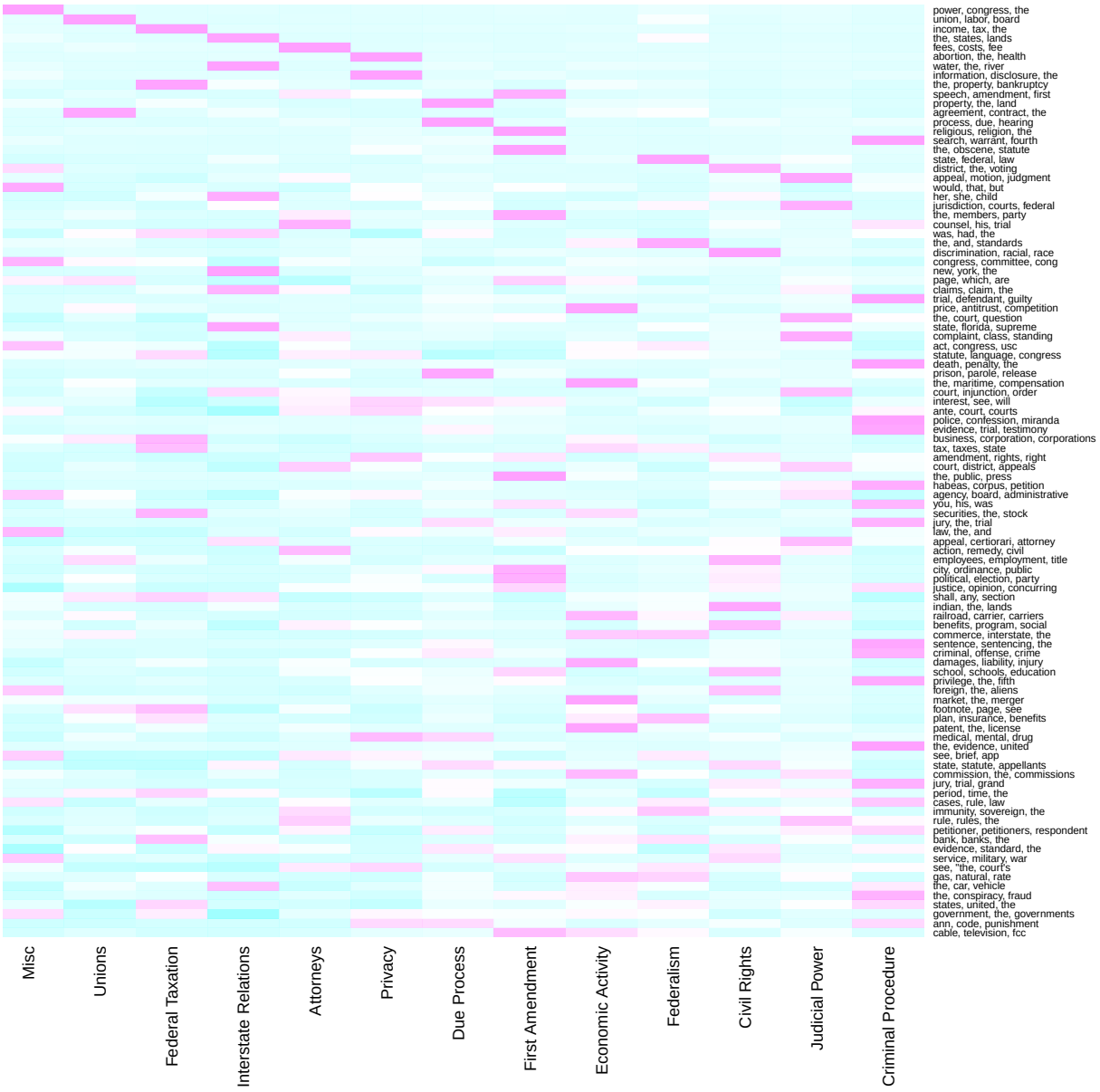

Figure 2: *Heatmap of 100 Topic LDA Topic Proportions By SCD Issue Codes* The heatmap is based on the average LDA topic proportion for each of the SCD issue areas. Darker, purple shades indicate greater values (i.e., higher topic proportions within that SCD issue area) while lighter, blue shades indicate smaller values (i.e., lower topic proportions within that SCD issue area).

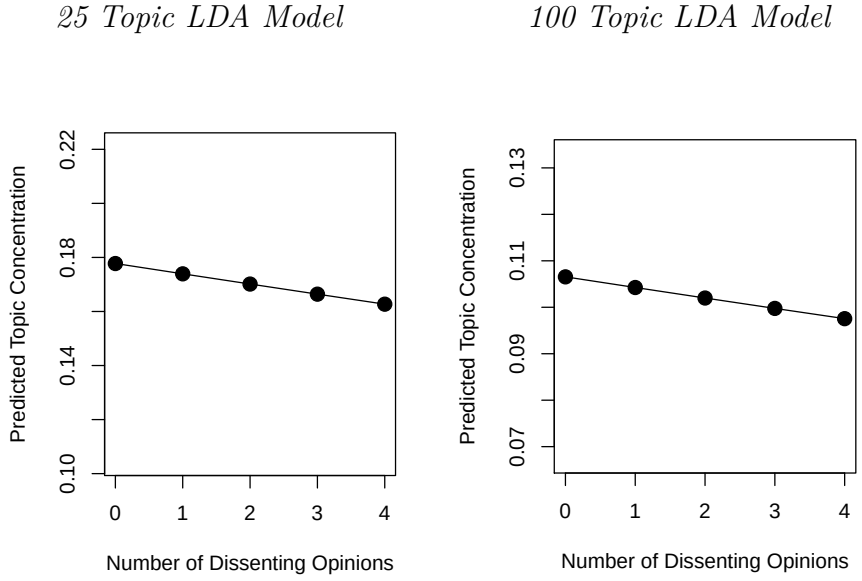

Figure 3: *Predicted Values of Document Topic Concentration* These plots provide predicted values of majority opinion topic concentration (y-axis) across the range of values for ideological distance (x-axis) for concentration measures computed from a 25 topic LDA (left panel) and a 100 topic LDA (right panel). Predicted values were estimated with each of the other independent variables held at their means.

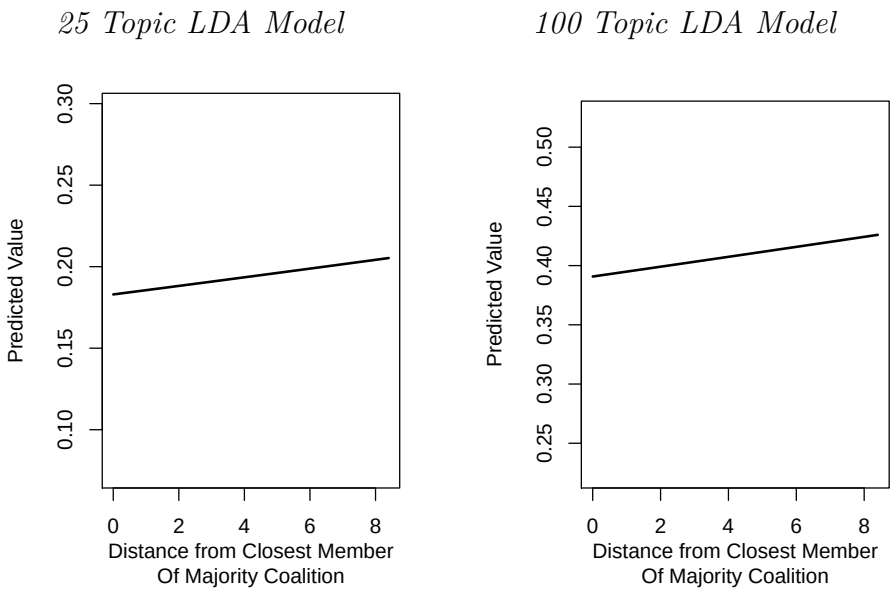

Figure 4: *Predicted Values of Document Dissimilarity* These plots provide predicted values of the topic similarity between a dissenting opinion and the majority opinion (y-axis) across the range of values for ideological distance (x-axis) for similarity measures computed from a 25 topic LDA (left panel) and a 100 topic LDA (right panel). Predicted values were estimated with each of the other independent variables held at their means.