

Visualizing the U.S. Supreme Court

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Abstract

What do the votes of the justices of the U.S. Supreme Court reveal about their ideological locations? Scholars have long employed the liberal/conservative vote to characterize the preferences of the justices, but little attention has been given to the potential deficiencies that might be associated with this measure. Drawing upon recent research that provides a method for identifying ideologically valid votes, we employ multidimensional scaling to locate in dimensional space the justices serving from 1946 to 2011. Our estimates provide, we think, one useful alternative to some of the ideal points upon which scholars presently rely.

Introduction

Probably the central variable in empirical studies of the U.S. Supreme Court is whether a vote on the Court is liberal or conservative. Measured at both the institutional and the individual level, this variable has been the focal point of a great many analyses of the justices' behavior. Although scholars have long questioned whether a justice's decision should be --- or even can be --- so neatly dichotomized, there is little doubt that this measure has been enormously useful in helping to understand the choices the justices make.

Using this variable, political scientists have sought, among other things, to uncover the motivations that underlie the justices' behavior, to locate the justices in dimensional space, and to develop predictive models in a wide variety of policy domains. This work carries with it the implicit assumption that all votes are equally valid measures of the ideological direction of the Court's decisions. To be sure, some analysts sift out certain non-salient cases (see, e.g., Bailey 2012) and others depart

from the standard liberal-conservative coding in some cases (see, e.g., Epstein and Segal 2006). Such subtleties notwithstanding, scholars generally take as a given that, in statistical models of the Supreme Court, the ideological direction of any vote is as valid an indicator of valence as any other (but see Harvey and Woodruff 2011). Stated differently, all liberal votes indicate a preference for liberal policy, just as all conservative votes suggest support for a conservative policy.

Recently, however, some research has indicated that this assumption may not be entirely valid (McGuire and Stimson 2004; McGuire and Vanberg 2012; McGuire et al. 2009). Identifying systematic differences between votes to reverse and votes to affirm the lower courts who decisions the Court reviews, this work suggests that there is a significant bias that affects --- and distorts --- the interpretation of the ideology of the liberal/conservative vote. We rely upon those findings and employ an alternative method for measuring the ideology of a justice's voting record, and through the use of multidimensional scaling, we provide a location in ideological space for each justice in each term of the Court from 1946 to 2011.

The Ideological Direction of Judicial Voting

At least since C. Herman Pritchett (1941) analyzed the voting records of the justices, scholars have conceptualized the decisions of the Supreme Court as liberal or conservative. Indeed, the early innovations in the empirical study of the Court relied upon scaling techniques to suggest that the justices and their cases could be placed along an ideological continuum. Whether a justice voted in a liberal or a

conservative direction in any given case was a function of where that justice was located relative to the case stimuli (see, e.g., Schubert 1965; Rohde and Spaeth 1976); if a justice were located to the left of a case stimulus (or, if one prefers, to the left of the midpoint between the alternatives in a case), that justice would vote in a liberal direction, and a justice to the right of that same set of case facts would support a conservative legal rule. Of course, what one might consider liberal or conservative varies a good deal, depending upon the issue --- a vote favoring the government would be regarded as liberal in a case involving economic regulation and conservative in a civil liberties case --- but the basic logic of locating justices and case facts applies across the policy domains that populate the Court's plenary docket. The position of each justice relative to a case governs each justice's vote and, by implication, the outcome of that case (Segal and Spaeth 2002, 89-97). Through the use of scaling techniques, scholars were able to establish not only the relative ideological order of the justices but the location of the cases, as well. Thus, for example, a civil liberties case that was decided, say, by an 8-1 vote in a liberal direction would be one in which it would be (at least for that set of justices) relatively easy to support the liberal interest, while a different case decided by an 8-1 vote in a conservative direction would be more difficult to resolve in favor of that same interest.

Once scholars established clear evidence of dimensionality on the Court, subsequent research moved beyond documenting regularities in the voting patterns of the justices and sought to account for those votes in predictive statistical models. The ideological direction of a justice's (or the Court's) vote became a widely used

dependent variable, as analysts developed external measures of the justices' preferences to account for those decisions (see, e.g., Segal 1984; Segal and Cover 1989). Today, it is quite common to find the use of the liberal/conservative dichotomy used as a dependent variable in studies of the U.S. Supreme Court (see, e.g., Bailey and Maltzman 2008; Bartels 2009), as well as research on lower federal courts (see, e.g., Boyd, Epstein, and Martin 2010; Calvin, Collins, and Eshbaugh-Soha 2011) and state supreme courts (see, e.g., Bonneau and Rice 2009; Randazzo, Waterman, and Fix 2011).

To be sure, this measure is quite valuable. It neatly captures the valence associated with a vote or a case outcome, and it is quite robust in wide variety of empirical models. Perhaps for this reason, political scientists have not devoted much effort to examining whether this measure is universally valid. In the case of the U.S. Supreme Court, in particular, the ideological direction of a vote is generally acknowledged as an appropriate indicator of the justices' (or the Court's) policy predilections; scholars accept, usually implicitly, that, within the set of cases most commonly analyzed, all votes are likely to be equally valid indicators of the justices' underlying preferences. Aside from the occasional exclusion of unanimous cases, the systematic selection of some votes over others has not generated much attention, and there has been little concern --- aside the from the interesting analysis conducted by Harvey and Woodruff (2011) --- about the empirical consequences of using the ideological direction of a vote in quantitative analyses of the Court.

There are, however, reasons to examine critically the use of this variable. As we explain, there are contaminating effects that dog reliance upon this measure. In what follows, we explain the forces that undercut the effectiveness of this measure, and we offer an alternative method for measuring ideological voting and use that method to locate the justices in dimensional space.

Selecting Valid Votes

From a mechanical perspective, the Supreme Court is remarkably consistent in the manner in which it disposes of its cases from one year to the next; the bulk of the lower court decisions that the Court accepts for review are reversed by the justices, rather than affirmed. Roughly two-thirds of the Court's decisions on the merits are decided by reversal, subject of course to some variation across terms (Segal and Spaeth 2002, 262-264). A primary motive that drives these outcomes is the Court's desire to select cases in which it questions the ideological outcome of the lower court (Caldeira and Wright 1988; Caldeira, Wright, and Zorn 1999; Perry 1991; Rehnquist 1988).

If the outcomes of the Court's cases are stable over time --- i.e., if the Court reverses most of the lower court decisions it reviews ---- then the ideological movement over time of the Court's policy outcomes must be a function of changes in the ideological composition of the cases that the Court places on its agenda. Thus, if the Court renders mostly conservative decisions, it is because the Court has reviewed (and reversed) mostly liberal lower court decisions. Likewise, if the Court appears to be liberal in its policy outputs, it is governed by the Court docketing (and

reversing) a larger number of conservative decisions made by lower courts. Functionally, the Court is engaged in the consistent overturning of lower court policy, and longitudinal variation in the composition of that lower court policy produces ideological change.

As explained in more detail elsewhere (McGuire et al. 2009; McGuire and Vanberg 2012), the interplay of lower courts and litigants who might appeal to the Court conspire to complicate the straightforward interpretation of the ideological direction of the justices' votes. The basic logic hinges on the tendency of litigants (who want to win in the Court) to challenge lower courts (who want to adhere to their own preferences without being overturned) whose decisions depart significantly from the Court's prevailing policy orientations. Thus, when the Supreme Court is conservative, liberal lower courts make policies as liberal as they dare, and these policies become attractive candidates for review by the Court. Conservative lower courts, by contrast, follow their instincts and make conservative policies that more closely approximate the Court's ideal point and perforce are less likely to be of interest to the justices.

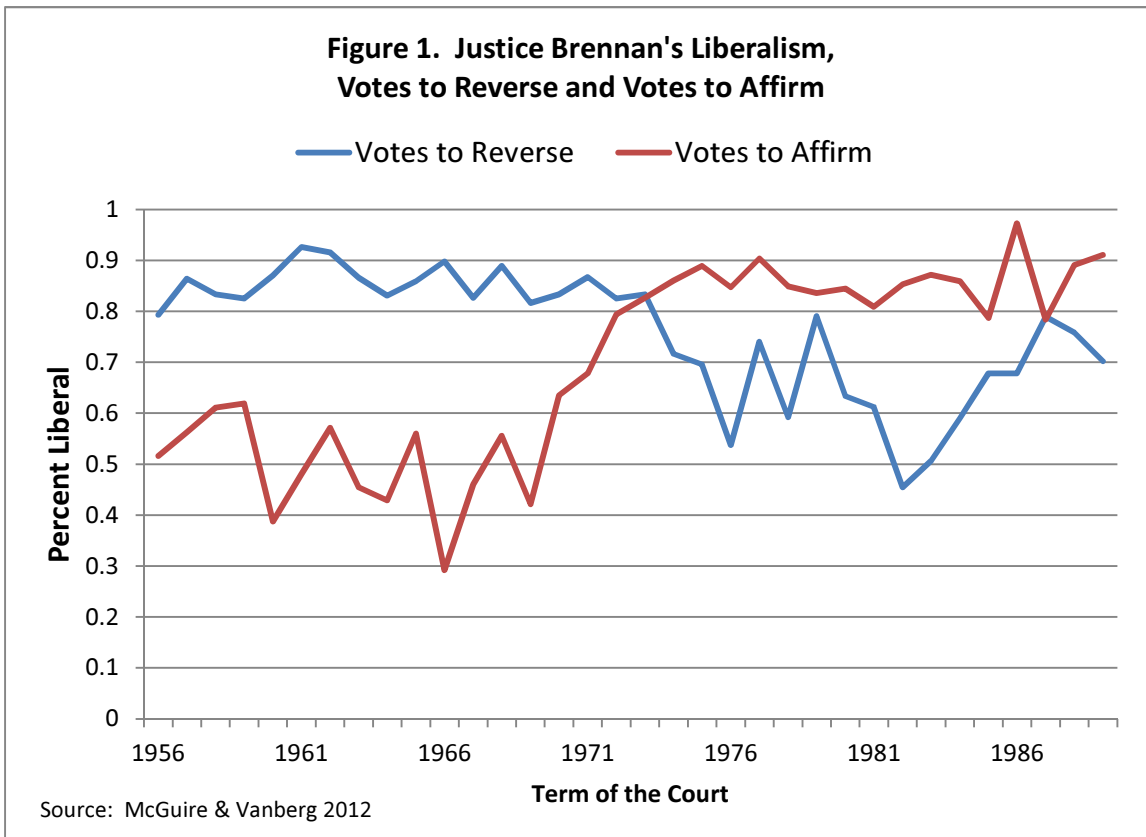
As this right-leaning Court reviews mostly liberal lower court policies, the median justice --- and those to her right --- will generally seek to "conservatize" those policies by voting to reverse. Justices to the left of the median will, in most cases, vote in a liberal direction by voting to affirm. In this way, both liberal and conservative justices reveal their preferences.

Because litigants petition the Court with uncertainty about the outcome of their cases, however, they can make mistakes about their likelihood of winning; for

example, knowing that the Court is generally sympathetic to conservative interests, litigants might overestimate the Court's conservatism by asking it to adopt legal policy that is farther to the right than the Court is prepared to go.¹ When a litigant *overestimates* the Court's conservatism, even a justice to the *right* of the median may find herself closer to the legal rule embodied in the lower court decision and vote to *affirm* that *liberal* decision. In like fashion, when a litigant *underestimates* the Court's conservatism by challenging a very liberal lower court policy, even a justice located to the *left* of the median may find the petitioner's position more appealing than the ruling of the lower court and vote *conservatively* by voting to *reverse* that liberal decision. Obviously, the same logic applies in reverse when the Court is liberal.

The empirical implication of this theoretical argument is noteworthy. When the Court is conservative, justices who share the Court's policy orientations (i.e., the median justice and those to her right) will correctly appear conservative when one examines their votes to reverse, while those who do not share the Court's policy aims (i.e., those to the left of the median) will correctly appear liberal when one examines their votes to affirm. Ironically, precisely the opposite picture emerges in the alternative sets of votes: conservatives will incorrectly appear liberal when voting to affirm, and liberals will incorrectly seem to be conservative when voting to reverse. Accordingly, for both liberal and conservative justices, the ideological direction of their votes to reverse will be negatively correlated with their votes to

¹ Of course, they can also err by estimating that the Court wants to move legal policy to the left, by challenging conservative lower court rulings, but if litigants are rational and reasonably effective at assessing the Court's preferences, those cases should be relatively few in number.



affirm. Depending upon the Court's aggregate policy preferences, and where a justice is located relative to those preferences, one set of votes will be valid indicators of preferences and the other will not.

A brief illustration, examining the voting behavior of Justice William Brennan, demonstrates the importance of distinguishing between votes to reverse and affirm. Brennan's early tenure was the heyday of Supreme Court liberalism. As a justice who shared the Warren Court's liberal orientations, he was part of the dominant policy coalition, and therefore his votes to reverse during that time period should reveal his liberalism. This is precisely what the data in Figure 1 reveal; from the beginning of Earl Warren's chief justiceship until roughly the four Nixon appointments, Brennan voted liberally --- when voting to reverse --- at slightly more

than 80% of the time. At the same time, his votes to affirm suggest that he was a far more moderate justice, in several terms often supporting the conservative side more often than the liberal side. By the mid-1970s, though, when Brennan was no longer “in tune” with the Court’s preferences, his votes to affirm became, as expected, the more accurate barometer of his ideological position. Now on a conservative Court, Brennan showed high levels of support for the liberal side when voting to affirm --- levels comparable to his votes to reverse under the previous liberal regime. At the same time, his liberalism in votes to reverse revealed a precipitous decline. Clearly, if one wanted to characterize accurately Justice Brennan’s liberalism, one would rely only upon those votes that reveal his underlying preferences, and as these data show, in one time period, it is his reversal votes, and in another, it is his votes to affirm. When seen through the lens of theoretically appropriate votes, Brennan was a solid and consistent liberal throughout his tenure on the Court.

In light of this theory and its empirical support (McGuire and Vanberg 2012), any attempt to compare the ideological votes of the justices would do well to take into account the differences that exist across these two sets of votes, selecting the valid and jettisoning the invalid. Since we seek to locate the justices in dimensional space --- and since our methodology directly compares annual rates of liberalism among the justices --- we proceed by selecting those votes that conform to the theory outlined above.

This process requires two pieces of information, whether the median justice (and thus, the Court) in any given term could be characterized as liberal or

conservative and whether the remaining justices were located to the left or the right of the median. Although there is obviously room for disagreement about how best to approach this task, we rely upon the widely-used newspaper editorial scores (Segal and Cover 1989). Their virtues in this case is that they are independent of the justices votes and are bounded between 0 (very conservative) and 1 (very liberal). Relying upon these scores, we characterize the Court as “liberal” in any term in which the median ideological score was less than or equal to .5 and “conservative” in any term in which the median ideological score was greater than .5. For the terms of the Court we analyze (1946-2011), this neatly divides the Court into two distinct cohorts; from 1946 through 1970, the Court was liberal, and from 1971 through 2011, the Court was conservative.

Next, we classified a justice as “in tune” or “out of tune” with the Court’s preferences by where that justice was located relative to the Court’s median. Justices located to the left of the median during the liberal era were counted as part of the dominant policy coalition, as were justices to the right of the median during the conservative period. The remaining justices --- i.e., those to right of a liberal median and those to the left of a conservative median --- were coded as outside the dominant coalition. (We did make one small adjustment to this scheme to allow for litigants’ imprecision in estimating their likelihood of winning. Inasmuch as some justices were technically not a part of the dominant coalition but still relatively close to the median, we sought to count them as “in tune” with the Court’s preferences if

their ideological scores were within the median absolute deviation from the ideology of the median justice.²)

Once a justice was classified as in or out of the dominant policymaking coalition, we had a guideline for determining which votes to select for analysis. For justices who were “in tune” with the Court’s preferences, we rely upon the ideological direction of their votes to reverse the lower court. For those who were “out of tune” with the Court, we employ their votes to affirm. Accordingly, we drew our data from the U.S. Supreme Court Database, selecting for analysis the ideological direction of the appropriate votes cast by each justice in all orally-argued cases (1946-2011 terms).

Methodology

The general objective of our analysis is to produce a representation of the justices over time such that each justice’s voting record in any given year can be compared to any other justice’s voting record in any specified year. We are hardly the first to undertake this task; indeed, mapping the justices’ locations in ideological space has undergone something of a renaissance in recent years (Bailey 2007; Martin and Quinn 2002). Our specific interest lies in representing the justices through a comparison of ideologically valid votes. This comparability should span

² So, for example, in some terms Justice William O. Douglas was located slightly to the right of the median justice. For most of his tenure on the Court, however, Douglas would almost surely be described as a liberal justice serving on a liberal Court. We sought to include such justices as “in tune” with the Court’s preferences if they were within the median value of the absolute deviations of ideological scores from the Court’s median ideological score. While in most terms, this calculation does not alter the standard 5-justice majority, in some terms it does add one or two additional justices to the Court’s dominant coalition.

the full set of justices, enabling a comparison of a specific justice's voting across different years, as well as comparisons of different justices at the same or different time points. In order to accomplish this objective, we perform a multidimensional scaling (MDS) analysis of all justices' voting records in every term of the U.S. Supreme Court from 1946 through 2011.

The basic dataset contains separate observations for each justice, for each term in which he or she served on the Court. Again, the terms run from 1946 through 2011 and for most years, there are nine justices serving.³ Therefore, the total number of observations (i.e., "justice-terms") in the dataset is 598. There are eleven variables, corresponding to the eleven substantive issue areas in which the Court made the majority of its policies.⁴ If we represent the full, rectangular data matrix as \mathbf{X} , then the cell entry, x_{ij} , represents the proportion of times that justice-term i ($i = 1, 2, \dots, 598$) cast a liberal vote on cases within issue area j ($j = 1, 2, \dots, 11$). The full set of 11 entries within a given row of \mathbf{X} , say \mathbf{x}_i , is sometimes called the "profile" for observation i . For each term, k with $k = 1946, 1947, \dots, 2011$, the value, n_{jk} gives the number of votes cast in issue area j by a justice in term k and $n_{.k}$ gives the total number of votes cast across the eleven issue areas in term k .

³ Of course, in some terms, there is turnover on the Court, such that one justice replaces another in the middle, rather than at the beginning of the term. Thus, in some terms (in 1953, 1962, 1975, 1981, 1991, and 1994, to select a few examples) there were more than nine justices who cast valid and analyzable votes.

⁴ The issue areas, as defined by the Supreme Court Database, are Criminal Procedure, Civil Rights, First Amendment, Due Process, Privacy, Attorneys, Unions, Economic Activity, Judicial Power, Federalism, and Federal Taxation.

In order to prepare the data for the MDS analysis, we need to calculate the dissimilarity between the profiles for every distinct pair of justice-terms. This is easily accomplished as follows:

$$\delta_{il} = \sqrt{\sum_{j=1}^{11} \left(\frac{x_{ij}n_{jk}}{n_{.k}} - \frac{x_{lj}n_{jm}}{n_{.m}} \right)^2}$$

Stated verbally, δ_{il} gives the weighted profile dissimilarity between justice-term i (which occurs during term k) and justice-term l (which occurs during term m). On the right-hand side of the expression, the proportions of liberal votes for each justice-term (that is, x_{ij} and x_{lj} , respectively) are weighted by the number of votes that occurred within each issue area for the terms represented in observations i and l ; the terms, themselves, are indicated as k and m (note that $k = m$ whenever two justices are compared against each other in the same term). The dissimilarity is simply the square root of the sum of squared differences between the weighted proportions for observations i and l across the eleven issue areas.

These profile dissimilarities are calculated for all $598(597)/2 = 178,503$ pairs of justice-terms. The pairwise dissimilarities are collected in the 598 by 598 matrix, $\mathbf{\Delta}$. The entry within each cell of this matrix, say, δ_{il} , gives the profile dissimilarity between the justice-term in the i^{th} row and the justice-term in the j^{th} column. The $\mathbf{\Delta}$ matrix is used as input to a metric multidimensional scaling routine, which uses an iterative strategy to estimate the coordinates for a set of 598 points within a space of specified dimensionality. The MDS solution algorithm locates the

points so that, to the greatest extent possible, the distances between pairs of points are linearly related to the profile dissimilarities between the corresponding pairs of justice-terms. Ideally, it will be possible to find a point configuration with a good fit to the dissimilarities in a low-dimensional space (i.e., one, two, or possibly three dimensions). In that case, the scaled point configuration can then be inspected visually. The interpoint distances provide a succinct summary of the differences between the observations. The substantive objective is to determine whether the point configuration reveals interesting features about the scaled objects (i.e., justice-terms) or whether aspects of the scaled point “cloud” correspond to substantively meaningful characteristics of the objects. In this manner, an MDS solution tries to reveal the underlying structure within a set of objects in a way that is not affected by the researcher’s prior ideas about how those objects differ among themselves.

Most MDS software relies upon and reports a *badness-of-fit* measure called Stress. The Stress coefficient summarizes the degree to which the relative sizes of the scaled interpoint distances *fail* to correspond to the relative sizes of the dissimilarities between the objects. So, smaller values of Stress (i.e., closer to zero) indicate better model fit. Given the unusual nature of the Stress coefficient, it is also useful to report the correlation between the interpoint distances in the MDS solution and the corresponding pairwise dissimilarities in Δ . If the former truly are a linear function of the latter, then this correlation should be very large. Better fit can always be achieved by increasing the dimensionality of the MDS solution. But that is not especially desirable because it produces a more complex model that is difficult to comprehend. Typically, the analyst looks for the most parsimonious

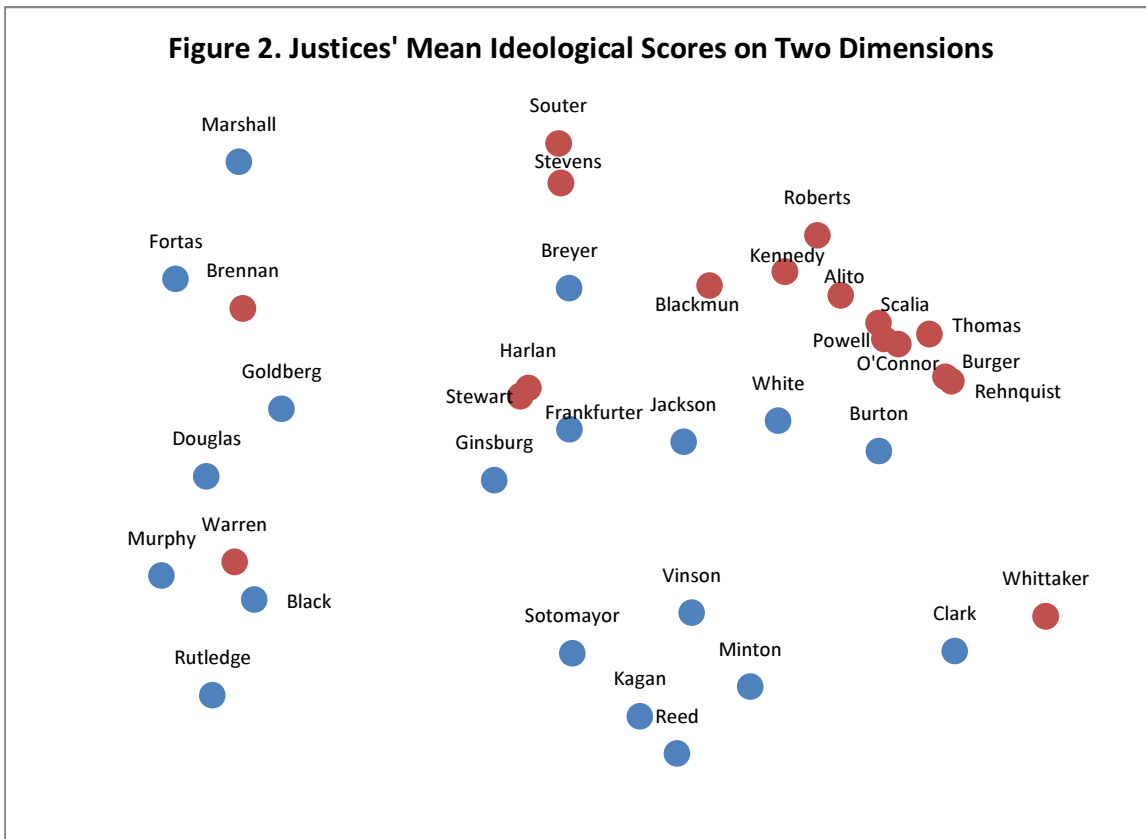
scaling solution (i.e., the lowest dimensionality) that still provides a good correspondence between the dissimilarities and the distances.

In the present case, the Stress value for the two-dimensional MDS solution is 0.042. This is quite close to the minimum possible value of zero. The easier-to-interpret correlation between the distances and the dissimilarities for this solution is very high, at 0.924. In contrast, a unidimensional MDS solution has much poorer fit, with a Stress coefficient of 0.155 and a correlation of only 0.809. The three-dimensional MDS solution produces a Stress coefficient of 0.014, and a correlation of 0.968. While this is an improvement over the two-dimensional solution, it is probably not sufficiently pronounced to justify moving to a more complicated model. The two-dimensional MDS solution fits the data very well. And, it can be represented very easily in graphical form. Therefore, we use it as a spatial representation of the justices' voting records for the remainder of this study.

Aggregate results

We can view the MDS results in a number of different ways. The first and most straightforward is to aggregate the justices' scores and examine their mean values on both dimensions. This approach ignores temporal variation but provides a rough sense of central tendency. Where do the justices generally locate themselves in two-dimensional space? Figure 2 provides the answer.

The horizontal dimension clearly conforms to the typical expectations about the ideological orientations of the justices. Those generally regarded as most liberal are on the far left of the figure. New Deal stalwarts, such as Justices Black, Douglas,



Murphy, and Rutledge, are the most liberal, as are the liberal leaders who followed during the Warren Era, such as Justices Brennan, Fortas, Goldberg, Marshall (and of course Chief Justice Warren himself). By contrast, conservatives appear on the right. Among the justices on the far right are Justices Clark, Thomas, and Whittaker, as well as Chief Justices Burger and Rehnquist. More moderate justices ---including Justices Frankfurter, Souter, Stevens, and Stewart ---- populate various positions in the middle of the figure.

Demarcating the political party of the appointing president further reinforces the ideological interpretation to this dimension. Republican appointees (marked in red) cluster in the top right of the figure, while Democratic appointees (marked in blue) are generally in the middle or the far left of this dimension. One noteworthy

aspect of these data is the relative location of the Democratic appointees. By these data, today's Democratic justices are not nearly as liberal as their predecessors. So, for example, Justices Breyer and Ginsburg --- typically regarded as among the more liberal members of the current Court --- appear far more moderate relative to the likes of Brennan, Douglas, Fortas, and Marshall. In this sense, cases over which the present liberals might seem to agonize would be easy calls for their liberal brethren of a generation or two ago.

To be sure, there are some anomalies. Justices O'Connor and Powell, for example, register as more conservative than their reputations would seem to warrant; Justice Scalia appears to be no more conservative than these justices, and Chief Justice Roberts is slightly to their left. Still, in the main, the horizontal dimension squares with the common attitudinal explanation for the justices' behavior.

The meaning of the vertical dimension is not as readily apparent. It is worth noting that Republican appointees command the upper portion of the dimension, while justices appointed by Democratic presidents dominate the lower portion. It may be that there are substantive differences that distinguish the justices along this dimension. For our present purposes, though, we follow the lead of others (Martin and Quinn 2007) and focus on the ideological dimension as our principal interest.

The Court over time

If the horizontal dimension represents the ideology of the Court, then plotting the variation in scores over time should reveal an institution that has

Figure 3. Ideological Dimension Over Time
Individual Justice Scores and Median Justice

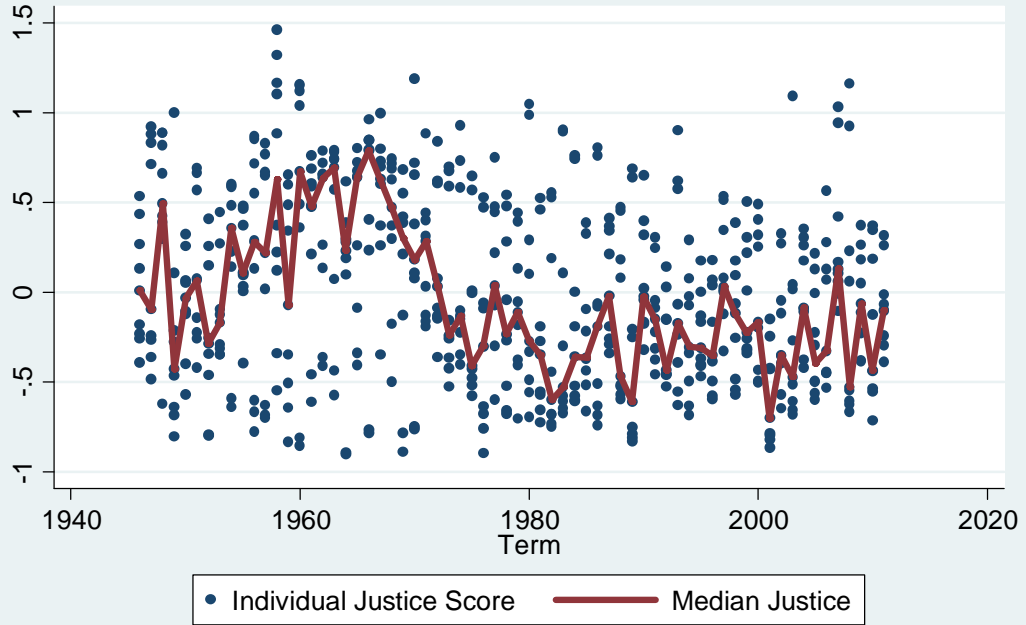
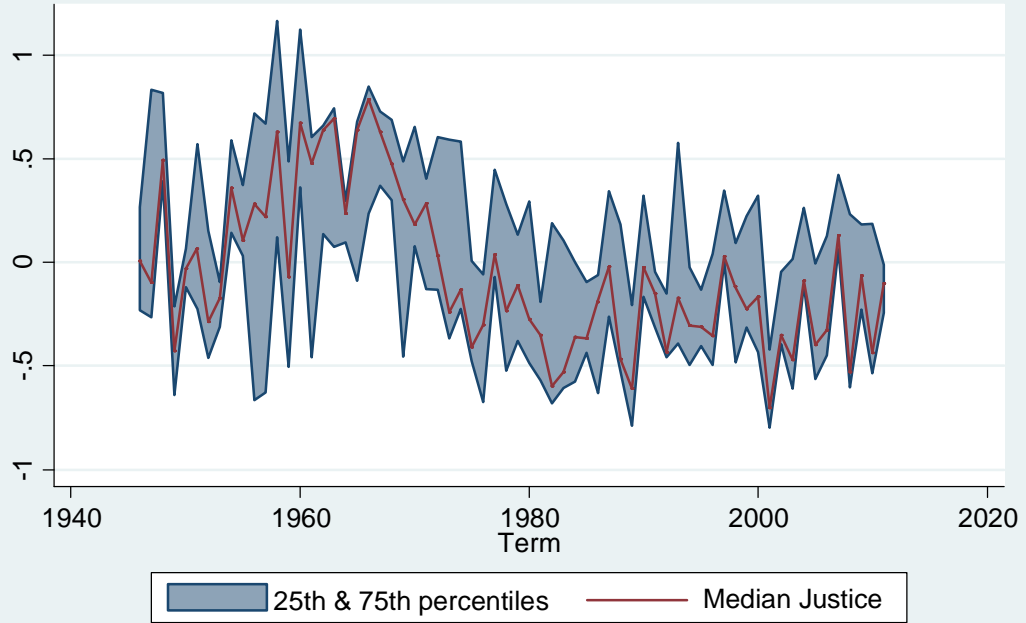


Figure 4. Ideological Dimension Over Time
Median Justice, 25th and 75th Percentiles



transformed from a liberal institution in the 1950s to a more conservative one since the 1970s. Figures 3 and 4 confirm that expectation. Both figures contain a time series line marking the median justice, and from the beginning of that time series the median justice starts a movement towards greater liberalism, reaching a peak at the end of the 1960s. (Higher scores, obviously, suggest a liberal median, and lower scores, a conservative median.) With the appointment of Chief Justice Burger in 1969, the Court began a sharp turn to the right, and by the mid-1970s, the Court reached a level of conservatism that it has maintained, more or less, ever since.⁵

These figures also reveal a good deal about the variation about the median in the ideological placement of the individual justices. Figure 3 plots each justice in each term, and it shows that there have been substantial differences over time in where the members of the Court are located, relative to their colleagues. Under Chief Justice Warren, a good many justices were both more liberal *and* more conservative than the median justice. Since the 1970s, by contrast, the conservatives have been a comfortable cohort, clustering fairly close to one another. The liberal members, by contrast, have been largely left out in the cold; they are located a fair distance from their brethren on the right.

Figure 4 formalizes that variation within Courts by plotting the justices at the 25th and 75th percentile, in each term, alongside the median. The closer either percentile line gets to the median justice, the greater the concentration of justices around the median. As a percentile line moves away from the median, the greater

⁵ The median justice is, to some degree, an oversimplification. The identity of the median justice can vary across different issue domains (Lauderdale and Clark 2012)

the dispersion of justices. These time lines reveal that in the early years of the Warren Court, the justices were ideologically separated from one another to a greater degree than at any other time, before or since. When the Court reach its apex of liberalism in the waning years of the Warren Court, though, the liberal cohort was banded together so closely that it is difficult to distinguish the median from the more liberal justices.

The picture changes quickly, following the appointments of Chief Justice Burger and Justices Blackmun, Powell, and Rehnquist. As the balance of power shifts to the right, the ideological spread increases on both sides of the median, and by the end of the 1970s, the knot of justices around the median that existed during the Warren Court reappears --- albeit on the opposite side of the ideological continuum. Indeed, the story since that time has been (with some exceptions) of Court that is not only conservative but a Court that has been controlled by conservatives who share quite similar conservative values. In some sense, this should not be surprising; twelve of the last sixteen appointments to the Court have been made by Republican presidents. Even so, the extent to which those justices share such similar values --- particular since the 2000 term --- is striking.

Examining individual justices

To this point, we have seen that, in a static sense, the individual justices reflect ideological placement consistent with our expectations. Likewise, the results show that, in a dynamic sense, the Court as a whole ebbs and flows in ways that match commonly understood conceptions of the Court's movement from left to

right. What remains is to combine these two perspectives by examining the locations of each justice over time. Have the justices, be they liberal or conservative, remained stable in their preferences, or have they exhibited variability, one way or the other, during their respective tenures on the bench?

In Figure 5, we display the first dimension scores of each justice over time, ordering the justices by the year of their appointment to the Court. Because these scores are generated by comparing each justice-term to every other justice-term, the members of the Court can be compared both to themselves (Where is a justice located from one term to the next?) and to one another (How does one justice's location compare to another?).

From a theoretical perspective, there is good reason to expect that the justices are not unlike other citizens and exhibit stable ideological orientations during their adult lives (Jennings and Markus 1984; Krosnick 1991; Sears and Funk 1999). At the same time, judicial scholars have documented ideological changes in almost all of members of the Court (Bailey 2012; Epstein et al. 1998; Epstein et al. 2007; Martin and Quinn 2007). Our data paint a somewhat mixed picture; a non-trivial number of justices exhibit significant variation, but most show ideological consistency. These characterizations are not entirely impressionistic; we utilize standard time-series diagnostics to help evaluate whether the justices' ideological placements display meaningful change over time.⁶

⁶ Specifically, we conducted an Augmented Dickey-Fuller test (with a lag of 1) to determine whether the values of each justice's dimensional scores are stationary and therefore have a constant mean over time. Although we do not present these tests here, they are available from the authors.

A good place to begin is at either end of the ideological spectrum, where the justices adhere to the same level of ideological voting throughout their careers. Staunch liberals, such as Justices Brennan and Marshall (and to a lesser extent, Black) score consistently high on this dimension during their time on the Court. At the other extreme, Chief Justices Burger and Rehnquist, as well as Justices Scalia and Thomas, remain reliably lower on the scale, marking their consistent conservatism. The middle members of the Court --- those whose scale scores are close to zero; Breyer, Harlan, Ginsburg, and Reed, for instance --- do not vary widely from their moderate moorings. (Both Breyer and Ginsburg, though, slightly exceed the critical threshold in our tests of stationarity.)

Some justices do reveal greater fluctuations, though still not exhibiting any significant movement to the left or right. Justice Douglas, though he generally scores high on liberalism, is quite wide-ranging and somewhat less predictable in his location. In this, he truly was “Wild Bill” (Murphy 2003). Similarly, Chief Justice Warren --- who began his tenure on the Court from a point in the middle of the ideological continuum and quickly moved, and remained, into the liberal camp --- does not change appreciably over time. White, though he began from a different starting point, followed a parallel path; in his earlier years, he was distinctively conservative but after several terms moved to the center of the dimension where the results place him for the balance of his career. Justice Frankfurter, a moderate justice by these estimates, displays a similar degree of dispersion around a stable mean.

Figure 5. Ideological Scores Over Time, by Justice

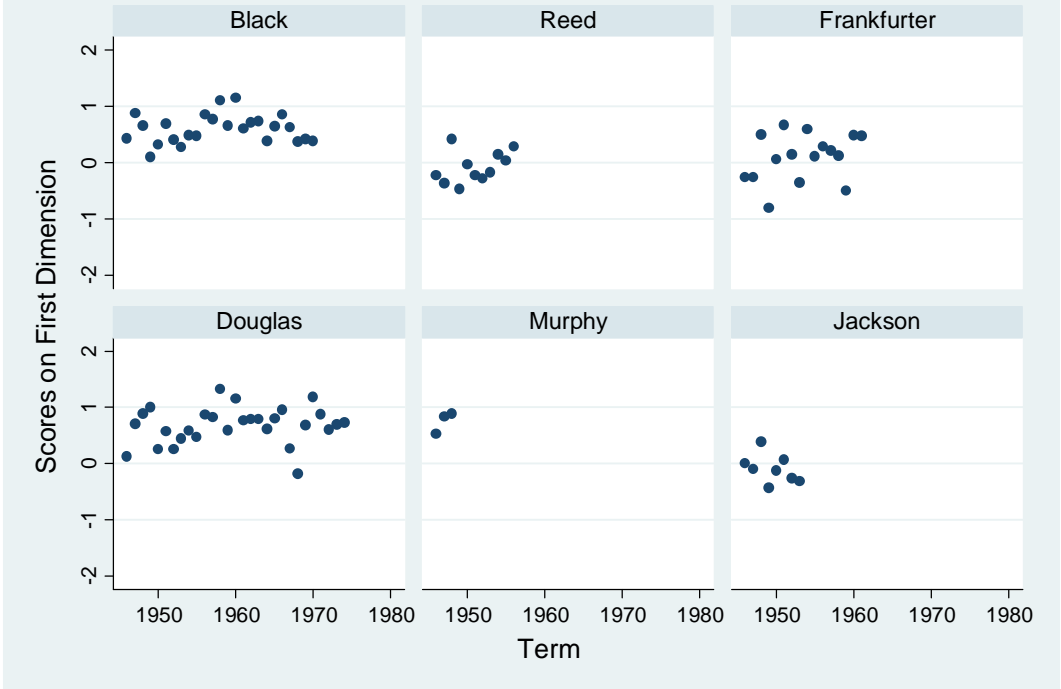


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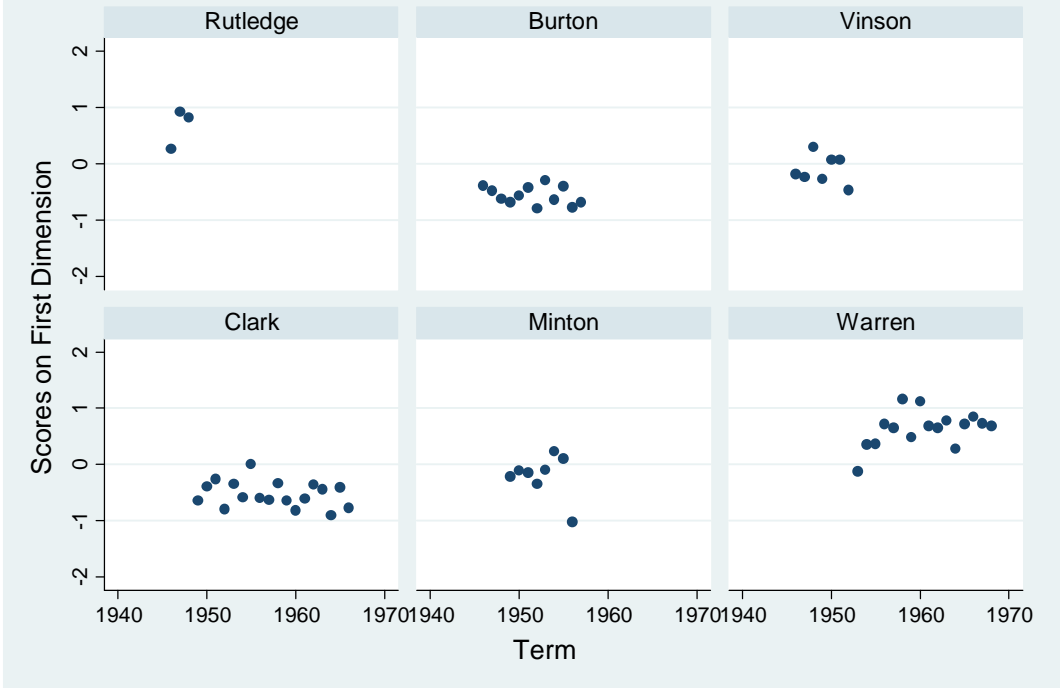


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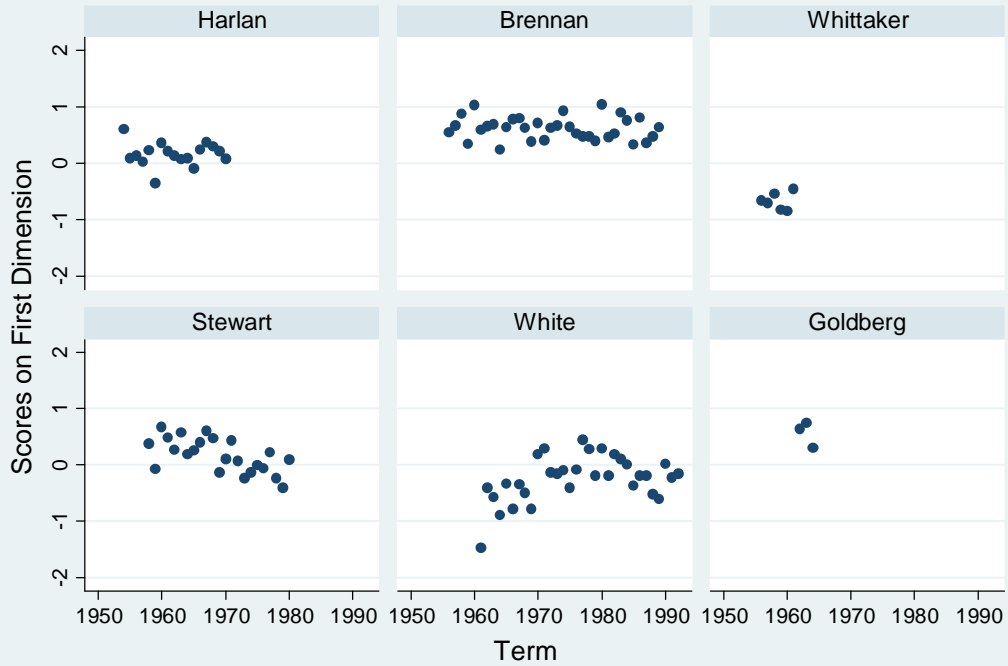


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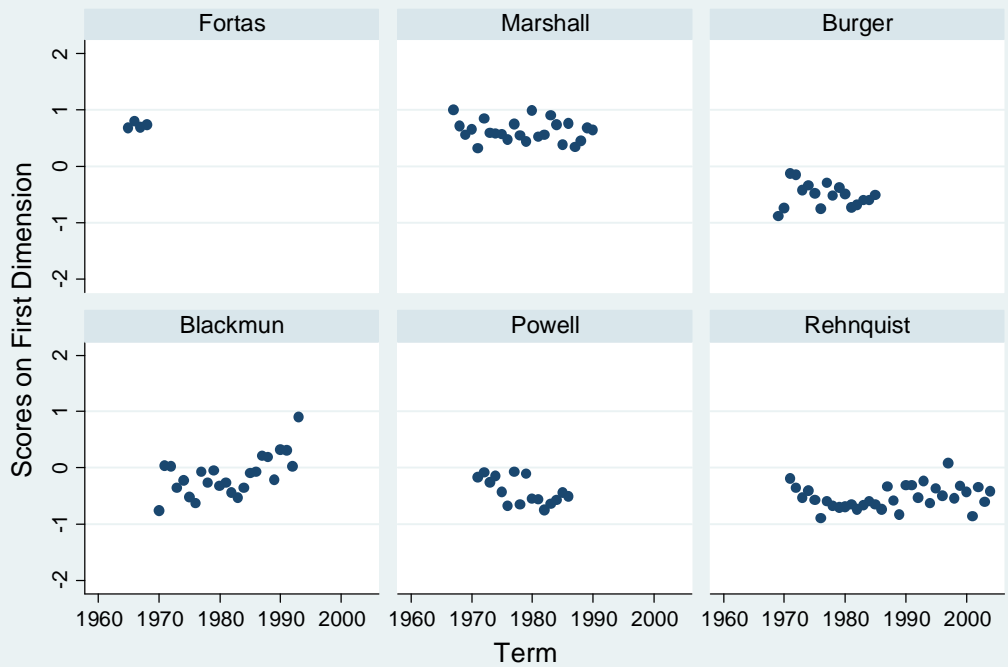


Figure 5. Ideological Scores Over Time, by Justice

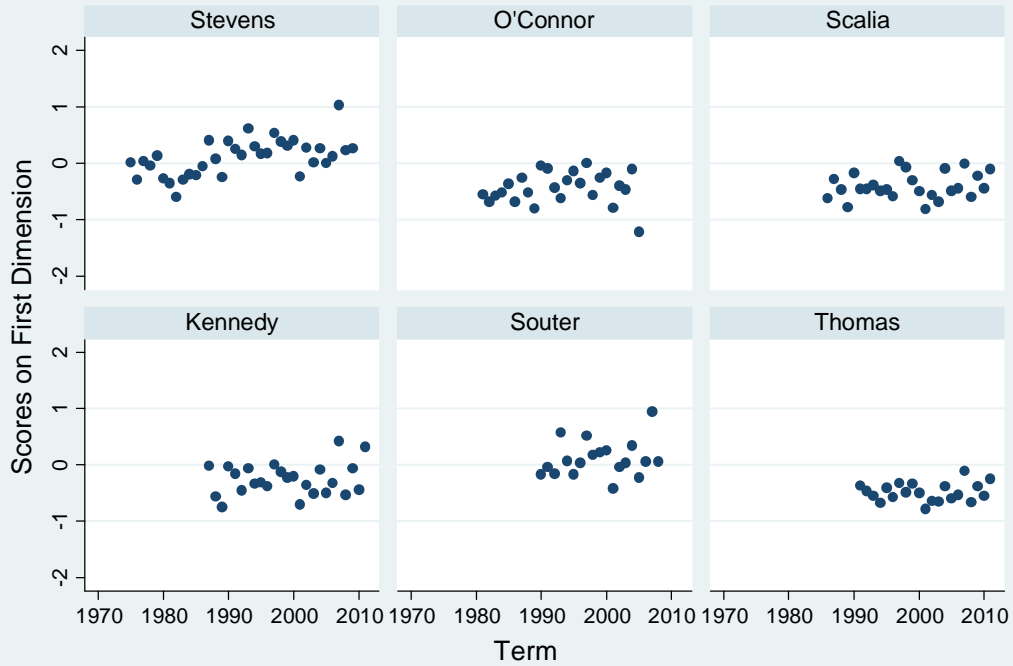
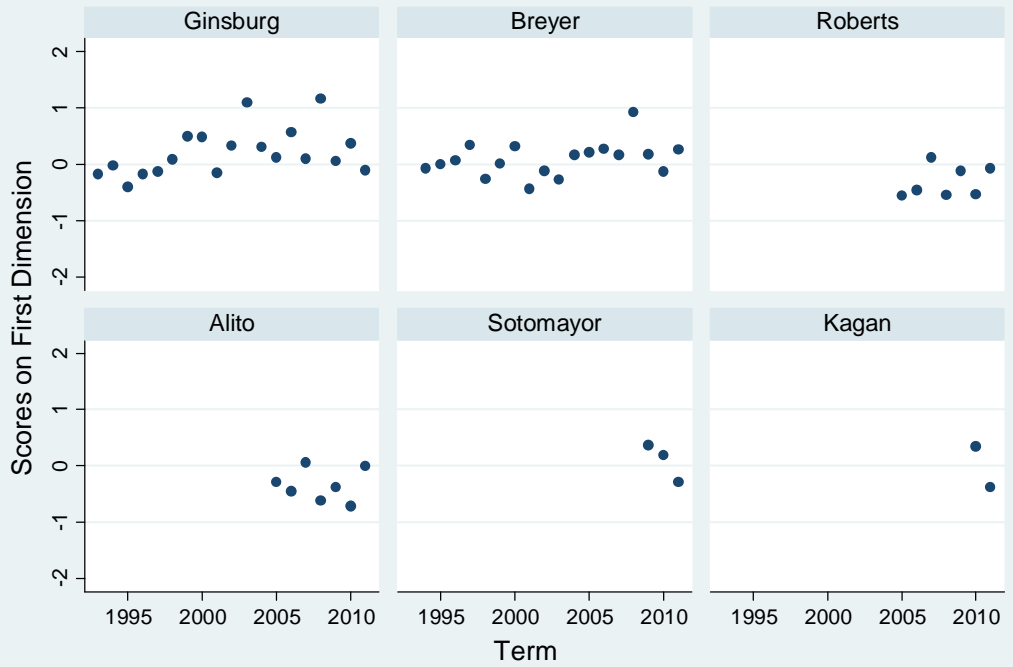


Figure 5. Ideological Scores Over Time, by Justice



Stability aside, a number of justices do demonstrate noteworthy patterns of movement in their ideological locations. Blackmun's transformation was quite linear, starting on the conservative side of the ideological divide and then moving leftward, term after term, until ending his career as a liberal. Blackmun is, of course, widely believed to have undergone such a transformation (see, e.g., Epstein et al. 1998; King 1996). Noticeably, no justice moved in the opposite direction, save Justices Powell and Stewart, both significantly so.

Taken together, these data suggest that our reliance upon ideologically valid votes provides a meaningful understanding of the ideological differences that exist across space and time. It does not, however, provide any evidence regarding the relative benefits of deriving ideological estimates according to the theory and method we have provided here. To assess the merits of our ideological placements, we test the usefulness of our scores against a commonly used measure of the justices' preferences.

A Validity Test

We are not alone in contemplating empirical measures of the ideological locations of the justices. Indeed, within the judicial field, some of the most sophisticated and most interesting recent research has been directed at this very question (Bailey 2012; Martin and Quinn 2007). We do not aim to challenge any of this work. Our primary interest is determining what analytical leverage, if any, is gained by deriving estimates of ideological placements for the justices by relying upon a set of votes that seeks to minimize the contaminating bias that distorts the

interpretation of the justices' revealed preferences. Given the prevalent use of the "liberal/conservative" vote variable in research on the Supreme Court, an alternative scheme that offers improvement is, we think, of some importance.

To gauge the utility of our estimates, we began by performing our MDS a second time, in precisely the same fashion but this time employing all of the justices' votes. That is, we did not select votes based on whether the Court was liberal or conservative or whether a justice was to the left or right of the median; we simply analyzed *all* available voting information. This exercise returned information that, in many respects, was similar to our initial results: the fit was near-perfect; the two-dimensional solution was the most parsimonious; and the ideological dimension showed the same left/right tendencies across the justices. That the second MDS performed about as well, however, does not reveal whether these alternative estimates are better indicators of the justices' underlying preferences than those we previously generated.

One way to compare the two sets of estimates is to regress some independent measure of the justices' ideology on each of the separate MDS scores. If our selection of "valid votes" is preferable, then the dimensional scores derived from our initial MDS should better account for the justices' preferences. Each set of MDS estimates is an imperfect replication of the justices' underlying and unobserved ideology. So, armed with a measure of that ideology, we can ask, "Is one of them a better indicator than the other?"

No doubt one of the best ways to measure the justices' preferences is by their voting behavior. We can hardly employ such a variable here, inasmuch as our

analysis is derived exclusively from those same votes. Of course, independent measures of the justices' preferences are scarce. The party identification of the president who nominated a justice is a plausible contender, but it obviously does not distinguish very well between justices. So, we rely upon the newspaper editorial scores (Segal and Cover 1989) for the same reasons that have made them so useful to other scholars; they offer a continuous measure of the justices' ideology obtained wholly independent of their voting on the Court.⁷

To construct our competing explanatory models, we establish our observations by justice-term. So, for the time period within our data, each justice has multiple observations, one for each term in which she served.⁸ The dependent variable is the justice's newspaper editorial score. (Note that these scores vary across justices, but for any individual justice they are the same across terms.) The results are presented in Table 1.⁹

We begin by modeling ideology as a function of our MDS scores derived from valid votes. Model 1 indicates that it is a strong predictor of the editorial scores, with an R^2 of .44. Model 2 repeats this procedure, substituting the MDS scores generated by our analysis of all ideological votes. By our theoretical lights, this

⁷ We are not unaware of the limits of these measures. For example, they were designed to measure the justices' preferences only in the area of civil liberties.

⁸ Because this creates the potential for serial correlation in the error terms, we estimate robust standard errors, clustering by justice in each model.

⁹ Although our initial N was 598, we excluded two justice-term observations from the MDS --- Justice Minton in 1956 and Justice Burton in 1958 --- because they included such a trivial number of votes (1 and 2 votes, respectively) that they produced extreme outliers.

Table 1. Impact of Ideological Estimates on the Justices' Preferences

<i>Variable</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
MDS score (Valid votes)	.42 * (.06)	—	.39 * (.10)	—	—	.33 * (.06)
MDS score (All votes)	—	.38 * (.09)	.03 (.12)	—	.20 * (.07)	—
Martin/Quinn Scores	—	—	—	.086 * (.022)	.051 * (.020)	.033 (.022)
Constant	.50 (.04)	.51 (.05)	.50 (.04)	.51 (.05)	.51 (.05)	.51 (.04)
R ²	.44	.31	.44	.32	.35	.46

N = 596. In all models, the dependent variable is the justice's newspaper editorial score. Robust standard errors, clustered on individual justices, are in parentheses; * *p* < .05 or better.

model should be inferior to Model 1, and the results show that it is. The coefficient is somewhat smaller, but more important the R² is substantially less --- only .31. Thus, this comparison offers reason to favor a reliance on the “valid votes”; the ideological scores on which they are based account for 13% more of the variance, which is marked improvement --- a 42% increase --- over the scores constructed by the MDS employing “all votes.”

Model 3 allows these two sets of dimensional scores to compete directly.¹⁰ When they go head-to-head, the estimates from “valid votes” prevail by a substantial margin. The coefficient for this variable declines only slightly, compared to the bivariate model, and it retains its statistical significance. Little is left of the estimate for the dimensional scores that rely upon the justices’ complete voting record; it drops to near zero, and its significant effect disappears. We regard this as strong support for our theory that, in describing the policy positions of the justices, it is important to eliminate those votes that are apt to create a systematic bias.

As a final robustness check, we estimate a set of equations that utilize the widely-used Martin-Quinn scores (Martin and Quinn 2002). We do so not as a means of criticizing or assessing the validity of these scores; there is little doubt that they are highly meaningful and useful measures of the justices’ ideological placement. Rather, because they are the most commonly employed indicator of the preferences of individual justices over time, we are simply interested in assessing how our estimates fair in the face of stiff competition.¹¹

In Model 4, we present a bivariate equation, one comparable to Models 1 and 2, in which we use the justice-term Martin-Quinn scores to predict ideology. Not surprisingly, the model yields a significant estimate; the more liberal the justice

¹⁰ Although they are strongly correlated ($r = .82$), they still leave one third of their covariance unexplained.

¹¹ The Martin-Quinn scores are not the only plausible measures against which we might compare our estimates. Bailey (2012) also provides state-of-the-art ideological scores. Because his scores are based on the calendar year, as opposed to Supreme Court term, we cannot readily incorporate them into our models.

based on her voting record, the most liberal her editorial score.¹² At the same time, it performs only about as well as the model that employs the MDS scores from the justices' complete voting record ($R^2 = .32$).

To test the efficacy of the MDS scores, we first introduce, in Model 5, the “all votes” dimensional scores. This variable adds something to the overall fit of the model, but not a great deal. The dimensional scores are likewise a significant predictor and pick up some of what the Martin-Quinn scores leave unaccounted. Including this additional variable depresses the coefficient for the Martin-Quinn scores, though not dramatically so, and it retains its significance in this model.

Model 6, though, creates a different impression. Here, we model the editorial scores as a function of both the Martin-Quinn scores and the dimensional scores created through our selection of theoretically appropriate votes.¹³ In this equation, our “valid votes” estimate emerges as an important predictor of ideology, while the Martin-Quinn coefficient is reduced to non-significance. At least in predicting an independent measure of the justices' ideology, therefore, our dimensional estimates tell us something about the Court that that the Martin-Quinn scores do not.¹⁴

¹² Users of the Martin-Quinn scores know that they are measured such that lower scores represent greater liberalism and higher scores reflect greater conservatism. To facilitate comparison between models, we recode their scores, multiplying them by -1, so that the various predictors run in the same direction.

¹³ Again, the intercorrelations between predictors is substantial but not overwhelming. The Martin-Quinn scores are correlated with the “all votes” scores and the “valid votes” scores at .81 and .68, respectively.

¹⁴ There is some suggestion that an ordinal ranking of the justices, based on the Martin-Quinn scores may, in some instances, be preferable to the original scores themselves (Ho and Quinn 2010), but we find no support for that here. Replacing

(Again, we undertake this analysis only as a means on confirming the strength of the scores we generate, not as method of critiquing the work of Martin and Quinn.)

Conclusions

It is worth thinking with some care about the merits of the votes that scholars of the U.S. Supreme Court employ in their analyses. The liberal/conservative vote has been a mainstay of judicial research, but does it consistently provide the kind of information that it is intended to yield? To be sure, taken on its own, it provides an extremely useful way of characterizing both the Court as an institution and its individual members. After all, if it did not, it would not be so widely accepted and utilized.

Our analysis does not call into question the validity of this measure in general. Instead, we have offered reasons for reconsidering which of the justices' votes should be used and under what circumstances. Our theory indicates that, based upon some fairly simple assessments of the ideological direction of the Court and the relative location of the justices, it is possible to select votes that more accurately reflect the underlying preferences that they are intended to measure.

To substantiate this, we employ multidimensional scaling to locate the justices, term by term, in ideological space. Focusing on the ideological dimension of this analysis, we show that the patterns that emerge are not only consistent with the generally understood political preferences of the justices but more valid as a method of mapping the Court, as well.

the original scores with the justices' ordinal rank in Model 6 yields precisely the same inferences.

We make no pretense of offering a superior measure of the justices' placement in ideological space. There are numerous indicators, each of which has its unique strengths and relevant applications. Our more modest claim is that, in seeking to represent the justices' ideology by relying upon the direction of the justices' votes, scholars should consider whether the data they employ provide an accurate depiction of the Court's true preferences.

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