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# COMPETING MODELS OF JUDICIAL COALITION FORMATION AND CASE OUTCOME DETERMINATION

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## ABSTRACT

Forming a coalition on a multi-judge panel involves an inherent trade-off between coalition maximization and ideological outcome optimization. Much scholarship is premised on assumptions about how judges make that trade-off; these assumptions have consequences for how we view and measure judicial decision-making. Specifying these assumptions, formally modeling their effects, and basing measures of judicial behavior on these results offer the potential to improve analysis of judicial decision-making.

This article formally explores three commonly posited modes of judicial decision-making: a minimum winning coalition model, representing attitudinalist views of judicial decision-making; a maximum winning coalition, capturing the effect of norms of joint opinion writing and collegiality; and a strategic model, incorporating the concept of the credibility of a marginal justice's threat to defect from a majority coalition. Each model yields comprehensive predictions of case outcome positions and coalition sizes under given Court compositions; the Rehnquist Court and Roberts Courts are examined here. The models are then operationalized as measures for empirical use. The different impact of the three measures is illustrated by re-running Baird and Jacobi's analysis of judicial signaling on case outcomes using each measure.

## 1. INTRODUCTION

In numerous cases, Chief Justice Warren Burger is reputed to have held back from voicing his opinion in conference until the position of the majority was clear, so that he could ensure that he was in the majority and thus able to assign the writing of the opinion. In the case of *Roe v. Wade*,<sup>2</sup> Burger is even said to have disingenuously claimed to have been in the majority so

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2 410 US 113 (1973).

as to be able to assign the opinion to Justice Blackmun, rather than allow Justice Douglas, the senior majority justice, to assign the opinion (Epstein and Knight, 1998). What such actions illustrate, other than the apparent cunning of Burger, is that case outcomes are the product of shifting judicial coalitions; but equally, and simultaneously, judicial coalitions can be expected to shift, subject to the position of the proposed majority opinion. One purpose of this article is to capture the inherent trade-off justices face between judicial coalition maximization and optimization of outcome determination—i.e. achieving the justices’ most preferred outcomes while maintaining a majority coalition or better.

2 One caveat for this endeavor, which the Burger illustration also suggests, is that coalition formation and case outcome determination, in the form of opinion writing, is as much art as it is science. They are a product of charm, persuasion and other intangibles not captured in formal models.<sup>3</sup> As such, no formal model or empirical proxy of judicial decision-making will ever perfectly capture the many nuances of the politics and personalities that determine the exact placement of cases or the size of the winning majority coalition.

3 Nevertheless, there is a great need for formal models of judicial behavior, because when scholars write about judicial behavior, and particularly when they empirically test effects on judicial behavior, they implicitly make assumptions about what drives judicial decision-making. For example, the classic debate between Fuller (1978), Fiss (1979), and Chayes (1976) about the appropriate level of judicial self-restraint involved assumptions about both institutional constraints on Courts and what preferences judges seek to promote when making judicial determinations. Similarly, much of the modern literature on judicial behavior concerns arguments back and forth about how judges decide cases—do judges simply maximize ideological preferences (e.g. Segal and Spaeth, 1993),<sup>4</sup> does doctrine matter for its own sake,<sup>5</sup> to what extent do judicial norms constrain judicial behavior (e.g. O’Brien,

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3 To the extent that scholars wish to model this process, it is necessary to set aside some of the idiosyncrasies, or noise, of judicial decision-making and attempt to capture the key elements. Thus certain complexities of judicial decision-making—such as the role of the opinion writer—must be put aside in order to model the key trade-off between judges achieving their preferred outcomes and forming majority or larger coalitions.

4 Or other factors that constitute judicial utility—see e.g. Posner (1993), Baum (1998).

5 Either because doctrine is binding through its inherent legal or moral authority, or because doctrine is functionally influential—see for example Bueno de Mesquita and Stephenson (2002), who demonstrate how the use of legal precedents by higher Courts alleviates difficulties in communication between different levels of a hierarchical Court system.

1999), and to what extent are judges strategic operators, sacrificing short-term goals for long-term objectives (e.g. Murphy, 1964; Caldeira, Wright, and Zorn, 1999)?

The question of how the content of a majority opinion is determined is “arguably the most important outstanding question about what the Court does,” yet there exists no previous rigorous theoretical account of how justices answer that question (Westerland, 2003: 2). Instead, scholars typically rely on assumptions that judges behave in one of the ways just described, without an understanding of what the effects of those assumptions are. These assumptions have consequences; they affect the conclusions scholars will reach. As such, it is necessary and important to examine the implications of making these assumptions. By formally modeling the assumptions implicit in these theories, it is possible to identify the ramifications of those assumptions in a rigorous way (see e.g. Riker, 1962; Murphy, 1964).<sup>6</sup> Whether those assumptions are credible, and thus whether the associated theories are persuasive, will determine which empirical measure scholars should use when undertaking those tests.

Empirical analysis of judicial behavior is particularly affected by the different assumptions these schools of thought make, as typically every result and every conclusion rests on an implicit model of judicial behavior. The different measures scholars rely on in undertaking empirical analysis of judicial decision-making—be it the granting of cert (e.g. Boucher and Segal, 1995) or of the influence of *stare decisis* (e.g. Segal and Spaeth, 1996)—implicitly adopt some assumptions about how judges decide cases. As well as examining the theoretical repercussions of assumptions about judicial behavior, this article explores what is the effect of using different measures of case outcomes, and suggests how to assess which measure should be utilized, given a particular theory of judicial behavior.

Currently, empirically-minded scholars have a simple measure of case outcomes and a sophisticated measure of judicial ideology available for their research. It is possible to combine these two elements to create a potentially more sophisticated measure of case outcomes. The standard measure of case

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6 There is an extensive literature on the related topics of legislative agenda control and strategic congressional voting that utilize a range of formal modeling techniques, many of which are influential on the judicial coalition formation literature discussed herein. See for example Cox and McCubbins (1993); Rohde (1991); Downs (1957), Shepsle, and Weingast (1987); Krehbiel (1998); Baron and Ferejohn (1989); Ferejohn and Shipan (1990); Deirmeier and Myerson (1999).

outcomes used in the literature looks only to whether a case is labeled “liberal” or “conservative.” This is defined according to which party wins the case.<sup>7</sup> Assessments of Court activity are typically based on the percentage of cases in a given year (or some other measure of judicial activity, such as natural Court) that are liberal compared to those that are conservative. However, this measure fails to account for variation among cases: some cases labeled “conservative” will be more conservative than others. For example, if the Court issues a ruling disallowing a certain kind of search or seizure without a warrant, this will be labeled as a liberal outcome; but so too would the Court deciding to outlaw every possible search or seizure without a warrant. Both rulings are liberal, but the latter ruling is more liberal. In contrast to the liberal-conservative measure, the three measures proposed in this article consider coalition size and composition, and also the *degree* to which underlying case facts can be characterized as liberal or conservative.

7 The proposed, more complicated measures of case outcomes proposed herein make use of Martin and Quinn’s (2002) judicial ideology scores. Martin and Quinn developed a dynamic measure of judicial ideology that tracks changes in judicial preferences over time, and puts each justice on a sliding scale of liberal-conservative, rather than imposing a simple dichotomy. It is possible to leverage this detail when measuring case outcomes by using aggregations of the Martin-Quinn scores of the majority coalition justices in any case as indicators of the ideological position of the case result.

8 How to aggregate those judicial ideology scores—that is, which justice or combination of justices’ scores constitute the score of the case

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7 This coding is supplied by the Supreme Court Judicial Database, a comprehensive database of Supreme Court decisions handed down since 1953 (updated annually, (Ann Arbor, MI: Inter-University Consortium for Political and Social Research, 1997), published as study #9422, available at the S. Sidney Ulmer Project website at <http://www.as.uky.edu/polisci/ulmerproject/sctdata.htm>). Each decision in the database is coded as either “liberal” or “conservative,” 1 and 0 respectively. In general, a case outcome is coded as liberal if it favors classic liberal underdogs such as: the accused in a criminal case, a person claiming the protection of civil rights of civil liberties, children, indigents, American Indians. Outcomes favoring affirmative action and reproductive freedom are also coded as liberal. Pro-union decisions are coded as liberal except in the context of antitrust cases, where a pro-union decision is regarded as conservative. Spaeth relies on slightly different underdog/upperdog coding in cases pertaining to economic activity. Liberal outcomes in those cases include pro-competition, anti-business, pro-indigent, pro-small business vis-a-vis large business, pro-debtor, pro-bankrupt, pro-Indian, pro-environmental protection, pro-consumer and pro-economic underdog. However, in the context of issues pertaining to federal taxation, any decision in favor of the United States is coded as liberal and any outcome which favors the taxpayer is conservative. See Spaeth (2005).

outcome—will depend on where we expect the case outcomes to lie in relation to the preferences of the judges making the case determination. That is, it will depend on which theory of judicial decision-making has been accepted. To develop these measures of case outcomes requires a rigorous theory of what case outcomes should arise, given the ideological composition of the winning coalition. As such, this article first models the effect of different assumptions about judicial behavior and the case outcomes each approach predicts, then proposes three alternative case-outcome measures, stemming from the three formal models and using the additional information provided by judicial ideology scores.

In section I, I formally explore three possible modes of judicial decision-making, varying the inherent trade-off between ideological positioning of case outcomes and coalition formation. From this, I produce three models of judicial ideology and coalition formation, which predict the ideological position of case outcomes and the size of the majority coalition in each case. The models are essentially: first, a minimum winning coalition model, which captures the attitudinalist notion of judicial decision-making; second, a maximum winning coalition, which represents theorized norms of joint opinion writing and collegiality; and third, a strategic model, that incorporates the concept of the credibility of threats to defect from a majority outcome when the outcome of cases is too distant from the marginal justice's preferences. 9

Using Martin and Quinn's (2002) measure of the dynamic ideal points of Supreme Court justices, the models yield comprehensive predictions about case outcomes under given Court compositions. In section II, I present comprehensive predictions of what case outcomes should be observed given the ideological preferences of the justices on the Rehnquist and Roberts Courts. 10

Since each of the models produces comprehensive predictions over a continuum of status quos—i.e. the case outcomes prior to Supreme Court action, under the lower Court ruling—they can be operationalized as measures. Section III develops three new measures for predicting case outcomes. The first measure captures the dominance of the median in median voter theory; its results hinge on the median justice. The second measure approximates a maximum winning coalition; its results hinge on the ideological position of the marginal justice in the coalition. The third measure approximates the mean of the ideal points of the majority coalition; its results hinge largely on the indifference point of the middle justice in the 11

coalition. These measures can be used in any empirical study that hypothesizes a given effect on case outcomes—be it partisan presidential ideology or a given legal doctrine.

12 Finally, in section IV, the three measures are applied to an empirical analysis of judicial ideology. I illustrate the effect of using different measures by re-running Baird and Jacobi's (2009) analysis of judicial signaling on case outcomes, using a simple percentage liberal measure, as well as each of the new proposed measures.

13 This article does not determine which theory, and associated set of assumptions, is best—rather, it aims to illustrate the assumptions that are implicitly being made every time scholars use a measure of judicial decision-making, and show the consequences of making those assumptions. In a follow-up article, Jacobi and Sag (2009) have undertaken empirical analysis of which measure provides the best account of Supreme Court cases. Section IV also outlines their results, and the implications that this article and that further research have for our understanding of judicial decision-making.

## 2. THREE MODELS OF JUDICIAL DECISION-MAKING AND COALITION FORMATION

14 Two complexities of majority coalition formation and case outcome determination are explored here: the simultaneous nature of coalition formation and outcome determination, and the inherent trade-off between the ideological positioning of case outcomes and maximizing the size of a majority coalition (see Maltzman and Wahlbeck, 1996: 583). Due to the first complexity, any equilibrium will consist of an outcome-coalition combination. Due to the second complexity, what those equilibria will be depends on the decision-making rule that balances that trade-off. Which decision-making rule is operative will depend in turn upon judicial utility, judicial behavior, and judicial norms, or their absence.

15 This section develops three formal models, which yield predictions over the placement and composition of majorities in the Supreme Court.<sup>8</sup> It assumes that the justices have full information: they know their own position, the positions of their colleagues, and the underlying status quo. The status quo is the outcome prior to Supreme Court action—the ideological position of the Circuit Court or state Court determination, such as whether a warrantless search is

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8 Similar analysis should apply to lower Courts—see e.g. George (1998).

valid when a crime was not committed. The status quo will remain the outcome if the lower Court ruling is upheld without change, or if cert. is denied, standing is denied, or if cert. is dismissed as improvidently granted, etc. Each of the models considers judicial ideology in one dimension, as is standard.<sup>9</sup>

In each of the models, a unique equilibrium outcome arises for each underlying set of case facts. These equilibria emerge after every possible majority opinion position is countered by every possible alternative outcome. No justice is assumed to have additional leverage or costs associated with proposing such alternatives, for example through specialization, or by virtue of being Chief Justice or the designated opinion writer. The reason that influences such as the power of the opinion writer are ignored here is that such explanations implicitly assume that justices will sign on to an opinion even when a majority would prefer some other outcome, because of the power of the opinion writer. Unless the opinion writer has specific expertise that changes her costs relative to the rest of the Court (Lax and Cameron, 2007), this explanation requires that the majority justices are for some reason “self-denying” (Hammond, Bonneau and Sheehan, 2005: 137). Not only does this explanation not make much theoretical sense, in practice there is little evidence to support it: Westerland found that the opinion writer has no power to pull the policy content of the opinion away from the median of the majority coalition (2003: 31).<sup>10</sup>

Nonetheless, in practice, the opinion writing process has various stages—the assignment of the case, the writing of a draft opinion, responses of other justices to the draft, and adjustments to other justices’ responses, as well as potential concurrences and dissents being circulated (see Maltzman, Spriggs, and Wahlbeck, 2000: 6)—and each stage can be strategically significant (*Id.*, 116). I collapse these stages down and examine only the ultimate determination of the case outcome.

9 See Grofman and Brazill (2002: 58). This is not to deny that other dimensions may be salient to judicial decision-makers—see e.g. Schubert (1974), who finds political and economic liberalism dimensions to be relevant. However unidimensional analysis allows for the clearest examination of the relationship between ideological preference maximization and coalition formation.

10 In contrast, Bonneau et al (2007) find some evidence of influence by the opinion writer, but they only consider two possibilities: that the outcome is equal to either the policy preference of the median justice, or that of the author of the majority opinion (they find evidence of both). These results are less persuasive than Westerland’s, since Bonneau et al treat the author of the majority opinion as the only majority-based alternative to the median of the Court, whereas Westerland considers two potential majority coalition influences: the author and the median of the majority. Westerland finds that when the latter is included, the former is insignificant.



### A. Modeling the Assumptions in Common Theories of Judicial Decision-Making

18 The underlying ideological position of the status quo,  $SQ_x$ , is key to determining the outcome of the case, because it constitutes the alternative to any proposed majority decision,  $M_x$ . A vote to affirm is a vote to maintain  $SQ_x$ . An undecided justice has to choose between supporting the majority ruling at  $M_x$  or dissenting in favor of maintaining the status quo  $SQ_x$ . This is a necessary initial simplification,<sup>11</sup> although in reality, when deciding whether to uphold a ruling or provide an alternative, justices can effectively write a dissent or concurrence at any point.<sup>12</sup> In Section I.B below, I relax this assumption and assess the impact of concurrences.

19 The position of the status quo affects both the existence and position of the majority opinion in favor of a given outcome. Whether at least five justices are willing to sign on to a majority opinion will depend on the distance between the justice and the status quo versus the justice and the proposed majority ruling.

$$i = \{J_1, J_2, \dots, J_9\}$$

$$s = (M_x, SQ_x) \text{ for all } s \in S$$

20 I assume that justices have single-peaked utility functions over policies occurring in one-dimensional issue space, with judicial utility decreasing monotonically as case outcomes diverge from a justice's ideal point. That is, a justice has a preferred outcome in a case, and the further the Court's decision strays from that position, the less satisfied the justice is. Furthermore, it is assumed that when indifferent, a justice will join a majority. It follows that:

$$s^* = M_x \text{ iff } (J_i - SQ_x)^2 > (J_i - M_x)^2.$$

21 i.e. a given justice,  $J_i$ , will join the majority if  $J_i$  prefers the majority outcome to the status quo. However:

11 The alternative is to instead assume that the non-opinion writing majority justices are passive receivers of the opinion proposed by the opinion writer, and then to relax this assumption (see Hammond, Bonneau and Sheehan, 2005: 125). When this passivity assumption is relaxed, the results mirror the ideological model, below (*Id.*: 128).

12 In reality, the choice of  $M_x$  may be affected by whether the decision reverses or affirms: this will act as a constraint on the position of  $M_x$ . The results can be read as subject to the window allowed by this limit. Similarly, other constraints may be operative, such as legal constraints, or the anticipated response of the elected branches, the public etc. These effects have been explored elsewhere—see e.g. Spiller and Tiller (1996) and Tiller (1999), who assess how choice between decision instruments (e.g., constitution, statutory interpretation, procedures, and facts) is influenced by fear of congressional override and higher Court review.

$M_x = f(SQ_x, J_1, J_2, \dots, J_n)$  such that  $(J_i - SQ_x)^2 > (J_i - M_x)^2$  for  $n \geq 5$ .

i.e. the position of  $M_x$  will itself be a function of the underlying status quo, the position of every justice, and the constraint that there need to be at least five justices to form a majority. 22

The position of  $M_x$  will also depend upon the relative value justices place on ideology compared to collegial support. Justices forming a majority will face a trade-off between the extent the opinion reflects their ideology and picking up additional votes from their colleagues, whose ideological positions may not mirror their own. Starting from first principles of this inevitable trade-off between ideological outcome maximization and coalition building that occurs whenever justices do not have identical preferences, I develop three decision rules that capture three contrasting theories of how this inherent trade-off is made: the “ideological,” “collegial,” and “strategic” models. 23

The first two models capture the dominance of each of the two competing forces, coalition maximization and ideological outcome optimization. First, I model the justices as pure ideologues: those who prefer that a majority outcome most closely approximates their ideological position over picking up a sixth vote. This decision-making rule is equivalent to a strategy of seeking a minimum winning coalition (Rohde, 1972). This first model captures a purist attitudinalist view of justices, which holds that justices decide cases predominantly by reference to their own political preferences (Segal and Spaeth, 1993; Baum, 1994). 24

Second, I model the justices as “collegials:” those who will sacrifice a case’s ideological proximity in order to maximize the size of a majority, short of switching sides. This model captures the view that judicial decision-making is structured by internal judicial norms, particularly of collegiality and consensus-building (Edwards, 1998; O’Brien, 1999; Maltzman, Spriggs, and Wahlbeck, 2000).<sup>13</sup> This could occur either from a straightforward value in collegiality itself,<sup>14</sup> or alternatively for more consequentialist motivations. For instance, justices may favor broad majorities so as to strengthen the power of a given opinion, in terms of public, 25

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13 Kornhauser and Sager (1993: 13) argue collegiality differentiates the U.S. Supreme Court from its English roots. Although the collegiality theory may be the one most compatible with the “theory of teams,” it is different in that the collegiality theory does not assume judges share a common objective—see e.g. Kornhauser (1989).

14 Judge Coffin (1994: 228) describes collegiality as “a cherished source of joy in the life of an appellate judge.”

legislative or presidential acceptance; or to promote the legitimacy of the Court, which otherwise may be hampered by split decisions.<sup>15</sup> In a working paper, Fischman (2007) has found a strong effect of consensus voting among judges in asylum and sex discrimination cases before the courts of appeals.<sup>16</sup>

26 If justices are willing to sacrifice ideological proximity for greater consensus, the equilibrium strategy is still  $s^* = M_x$  iff  $(J_i - SQ_x)^2 > (J_i - M_x)^2$ , but  $M_x = f(SQ_x, J_1, J_2, \dots, J_9)$  such that  $(J_i - SQ_x)^2 > (J_i - M_x)^2$  for the maximum number of judges possible. This does not mean that every outcome will be a unanimous opinion, as judges will sometimes have diametrically opposed preferences for change, but majority coalition size will be considerably higher than under the ideological model. This decision-making rule is reminiscent of a maximum winning coalition, with the outcome dependent on the “last justice in” to the coalition.

27 The third model requires some preliminary explanation. When the marginal justice is indifferent between joining the majority or dissenting, i.e. when  $s^*$  is an equality for a justice, that justice can credibly threaten to switch sides. If the marginal justice is the median, then that threat translates to forming a majority with the dissenting justices (see Brenner, Hagle, and Spaeth, 1989). Scholars have provided both detailed case examples and statistical analysis of the effectiveness of this threat.<sup>17</sup> The impact of this threat will shape the placement of  $M_x$ .

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15 Chief Justice Roberts, for example, considers the collegiality of the Supreme Court to be the test of a chief justice’s success or failure, largely for consequentialist reasons. “In Roberts’ view, the most successful chief justices help their colleagues speak with one voice. Unanimous, or nearly unanimous, decisions are hard to overturn and contribute to the stability of the law and the continuity of the Court; by contrast, closely divided, 5-4 decisions make it harder for the public to respect the Court as an impartial institution that transcends partisan politics.” Jeffrey Rosen, “Roberts’s Rules,” *Atlantic Monthly* (January/February 2007)

16 Fischman (2007) also provides a formal model of the norm of consensus, based on a cost associated with dissenting, which is not assumed here.

17 Epstein and Knight (1998) give examples of justices amending their draft opinions so as to maintain a coalition—sometimes with explicit statements such as: “As I need you for a Court... I send the draft to you before circulating it” (Id, 66). Epstein and Knight find significant changes occur in draft opinions in over 50% of opinions studied (Id, 99). Similarly, significant amendments to opinions by dissenting justices may render an opinion closer to the preferences of the marginal justice than the original majority opinion, and thus induce a switch. For example, Goldstein (2003) describes the development of the opinion in the landmark fair use case, *Sony v. Universal* 464 U.S. 417 (1984). Stevens’ dissent initially considered all private use beyond the scope of the Copyright Act, but amended his opinion to say that fair use protects private copying for the purpose of time shifting—but potentially excluding library building—and ultimately garnered a majority coalition (Id, 127).

Whether a justice will leave a majority is an important element, one which prior judicial models have tended to ignore (e.g. Edelman and Sherry, 2000). For instance, Carrubba et al (2007) assume that justices will not switch outcomes for opinion change, assuming instead that a justice will use the threat to concur in order to move the equilibrium outcome position. (The effect of concurrences is discussed *infra* in section I.A.) But as Hammond (2009: 17) points out, the justices' views of what ought to be in a majority opinion are a cause, not a consequence, of whether they support reversing or affirming the lower court. "If the opinion author writes a too-extreme draft opinion, the majority opinion author would be driving the median justice (and any majority-side justices with ideal points even closer to SQ than hers) into a coalition with the minority-side justices in defense of SQ." Thus it is appropriate to consider that justices will potentially switch sides in a vote. 28

Whether this threat is really credible, however, depends on the willingness of the dissenting justices to play ball. Consider a simplified example, illustrated in Figure 1, where justices are uniformly distributed ideologies. 29

When  $SQ_x = J_1$ , seven justices,  $J_3:J_9$ , prefer an alternative majority at  $M_x = J_3$ , and justice  $J_2$  is indifferent.  $J_2(SQ_x)$  is the point equidistant on  $J_2$ 's right to the status quo on  $J_2$ 's left, which makes  $J_2$  indifferent between  $SQ_x = J_1$  and  $J_2(SQ_x)$  (which here is equal to  $J_3$ , by the uniformity assumption). But six justices,  $J_4:J_9$ , also prefer a third alternative majority at any point in the range  $M_x = J_4:J_7$  (the bracketed range in Figure 1) to  $SQ_x$  or  $M_x = J_3$ . At the same time, justices  $J_1:J_5$  all prefer  $M_x = J_5$  to  $M_x = J_7$ ; thus  $J_4$  and  $J_5$  can threaten to switch sides unless  $M_x = J_5$ . But the credibility of this threat depends on  $J_1$ 's willingness to vote for  $M_x = J_5$  over  $SQ_x = J_1$ , when the status quo is so close to her ideal point. 30

What is not known is whether the otherwise dissenting justices will be willing to strategize to the extent of backing this threat, and thus whether the threat by  $J_4$  and  $J_5$  to switch is credible. We know that Courts have norms of behavior, stemming from the ongoing relationship between the justices, as well as notions of appropriate judicial conduct and ethics (Howard, 1981).<sup>18</sup> But we do not know how robust these norms are when 31

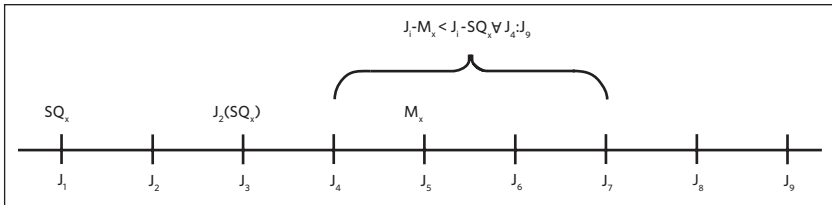
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18 Canon 19 of the Canons of Judicial Ethics states: "It is of high importance that judges constituting a Court of last resort should use effort and self-restraint to promote solidarity of conclusion and the consequent influence of judicial decision...."

they conflict with a justice’s preferred ideology. Rather than make assumptions about the nature of judicial conduct, I again consider two different decision-making rules, and apply them to each of the previous two initial strategies. The first is an unconstrained best response, under which the equilibrium strategy will be:

$$s^{\wedge} = M_x \text{ iff } (J_i - M_x)^2 > (J_i - M_x^{\wedge})^2.$$

**Figure 1. A Spatial Illustration**



32 Here, justices simply vote for whichever outcome is closer to their preferences. This decision rule will result in identical equilibrium outcomes, regardless of whether justices are ideologues or collegials.

33 The second decision rule is a constrained best response. The theory behind this rule is that dissenting judges may not be willing to be used by the swing justice to shift the position of  $M_x$  by threatening to join the dissenting judges, if the dissenting judges know that such an outcome will never actually materialize. In other words, the dissenting judges have the power to determine whether off-equilibrium path outcomes can be used as credible threats. A dissenting Justice must face a choice between being on record (if only in conference) supporting an outcome far from his or her preferences, so as to move the ultimate case outcome slightly towards his or her preferences. The unconstrained rule posits that a justice will agree to any possibility, as long as it results in any improvement in the case outcome. As an alternative, the constrained rule considered here is that dissenting judges would be willing to support the potentially switching justice if the ground gained by the alternative majority is greater than the movement the dissenting judges would have to make to endorse the alternative majority over  $SQ_x$ . Accordingly, this rule dictates that  $J_i$  will not agree to an alternative majority,  $M_x^{\wedge}$ , if the distance between  $J_i$ 's ideal point

and the status quo is less than the difference between the two proposed rulings:<sup>19</sup>

$$s^{\wedge} = M_x \text{ iff } (J_i - SQ_x)^2 > (M_x - M_x)^2.$$

This second decision rule will result in different outcomes for ideologues and collegials. Thus, in combination, the two sets of rules interact to make three possible strategies. I present three sets of equilibrium outcomes resulting from the three different decision rules: unconstrained best responses of both ideologues and collegials, constrained best responses of ideologues, and constrained best responses of collegials. I call these respectively the ideological model, the strategic model and the collegial model.<sup>20</sup> In summary, the equilibrium outcome of each model will be:

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Ideological Model:

$$s^* = M_x \text{ iff } (J_i - SQ_x)^2 > (J_i - M_x)^2$$

subject to  $(J_i - SQ_x)^2 > (J_i - M_x)^2$  for  $n \geq 5$ .

Collegial model:

$$s^* = M_x \text{ iff } (J_i - SQ_x)^2 > (J_i - M_x)^2,$$

where max.  $n$  such that  $(J_i - SQ_x)^2 > (J_i - M_x)^2$ .

Strategic Model:

$$s^* = M_x \text{ iff } (J_i - SQ_x)^2 > (J_i - M_x)^2$$

19 This rule does not account for any agenda-setting power, such as through opinion assignment and drafting; since justices can communicate, negotiate and, as analyzed in section I. A below, issue concurrences, the process is equivalent to an open rule system that allows for amendments. On opinion assignment, see Maltzman, Spriggs and Wahlbeck (2000: 33); Epstein and Knight (1998). For an analysis of the effect of an open and closed rule for coalition formation under the ideological model, within the context of opinion assignment, conference vote and certiorari, see Hammond, Bonneau and Sheehan (2005).

20 Hammond, Bonneau and Sheehan call their model a strategic model, but they assume that a justice's "sole objective is to have the Supreme Court adopt a policy as close as possible to his or her most-preferred policy on each case," (2005: 79) and thus is the equivalent to the ideological model here. Each of the three models presented above are strategic to the extent that the justices are conceived as forward-thinking rationalists; the collegial model, for example, could be conceived of as strategic, since justices may favor a collegial approach in order to increase the power of a majority opinion, the general power of stare decisis, or the broad legitimacy of the Court. "Strategic" as used here refers to the process of coalition building, and the assessment of credibility of commitments, rather than the sophistry of judicial motivations.

$$\text{subject to } (J_i - SQ_x)^2 > (J_i - M_x)^2 \text{ for } n \geq 5$$

$$\text{and } (J_i - SQ_x)^2 < (M_x - M_x)^2.$$

### B. Mapping the Predictions of the Three Models

35 Having defined the three decision-making models, this section specifies the equilibrium case outcomes that will occur for a continuum of status quos, ranging across the ideological spectrum of the Court and beyond. For any given status quo point, each of the three models predicts a unique equilibrium outcome that is stable—i.e. any proposed alternative, by any justice, will not overturn it. Thus every possible proposed majority opinion position and counter-proposal are weighed against one another in determining these equilibrium outcomes.

36 To illustrate, I first generate full results for the reductionist approach in the illustration—i.e. with a spectrum of uniformly distributed justices, and outcomes occurring at the position of the closest justice’s ideology. I then create a generalized model with a continuum of status quos, where outcomes can occur at any point on the ideological plane. In section II, I also relax the uniformity assumption and consider how the predictions apply to the Rehnquist and Roberts Courts, using Martin and Quinn’s ideological measures.

37 Consider first a status quo at the exact position of the median justice,  $J_5$ . This will result in a 9:0 judgment at  $M_x = J_5$ . All the justices are indifferent between  $SQ_x$  and  $M_x$ .  $J_1$ : $J_4$  prefer  $J_4$  to any  $M_x$  in this range, but if they dissent at  $SQ_x < M_x$ , a five justice majority will exist for  $M_x$  equidistant from  $SQ_x$  to the right of  $J_5$ . The reverse applies for status quos to the right of  $J_5$ . Thus  $J_5$  will be the 9:0 equilibrium outcome under each of the decision-making regimes.

38 But this result is fairly trivial: it occurs only at the exact cutpoint  $SQ_x = J_5$ , and arises out of the assumption that indifferent justices will join the majority opinion. However, to the extent that this result arises, it shows that it is unsafe to assume that a unanimous outcome must stem from a status quo at one ideological extreme or the other—as some scholars do. For example, Maltzman and Wahlbeck (1996: 586, fn 9) score unanimous cases as effectively 100% liberal or 100% conservative.<sup>21</sup> Whereas in fact unanimity arises for extreme *and* centrist status quos.

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21 Kritzer, Pickerill, and Richards (1998) critique this approach, pointing out that even though some cases may fall outside the ideological range of the Court it “seems unlikely” that 45% of the cases the Court has voluntarily chosen to hear “fall to the extremes of the attitudinalists’ ideological scale.”

The results are more interesting when we consider a continuum of status quos. Even a miniscule movement away from the median's ideal point, at  $SQ_x = J_5 +/\!-\!\varepsilon$ , under the ideological and strategic models the result will be a 5:4 judgment at  $M_x = J_5$ , and 6:3 judgment at the same point under the collegial model. If liberal movements are negative and conservative movements are positive, and thus the most liberal justice is  $J_1$  and the most conservative justice is  $J_9$ , then for  $SQ_x = J_5 + \varepsilon$ , the result will be a coalition  $J_1:J_5$  with outcome  $M_x = J_5$ . For  $SQ_x = J_5 - \varepsilon$ , the result will be a coalition  $J_5:J_9$  with outcome  $M_x = J_5$ . These results apply for any  $\frac{J_5+J_4}{2} < SQ_x < \frac{J_6+J_5}{2}$ .

39

A second example illustrates the difference between the various decision-making regimes. For simplicity, I now consider only alternatives at exactly the nine justices' ideal points, and again use the uniform distribution of justices, but this is relaxed again shortly.

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Consider a status quo at  $J_2$ . Seven justices,  $J_3:J_9$ , prefer  $M_x = J_3$  or  $J_4$ ; but a majority of that coalition,  $J_5:J_9$ , prefer an alternative majority  $M_x = J_5$  or  $J_6$  to  $M_x = J_4$ .

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- Under the collegial rule, because any movement further right than  $J_4$  will result in the loss of a potential majority member, the equilibrium outcome will be a 7:2 majority at  $M_x^* = J_4$ .
- Under the ideological rule, five justices prefer  $J_6$  to  $J_2$ , but  $J_5$  can credibly threaten to switch sides and form a majority with justices  $J_1:J_4$  at  $M_x = J_4$  if  $J_6:J_9$  do not agree to  $M_x = J_5$ . Thus the equilibrium outcome will be a 6:3 majority at  $M_x^* = J_5$ .
- But under the strategic rule,  $J_1$  and  $J_2$  will not agree to support  $J_5$ 's threat to defect. This is because the distance  $J_1$  and  $J_2$  would gain in helping  $J_5$  move the equilibrium closer to their preferences—from  $J_6$  to  $J_5$ —is less than what they lose, being on record supporting a position,  $J_4$ , far from their preferences, given they could instead dissent to maintain  $SQ_x$  at  $J_2$ . Under the strategic rule, the threat necessary to achieve  $M_x = J_5$  is not credible, so  $M_x^* = J_6$ . As such, the equilibrium is a 6:3 majority at  $J_6$ .

Table 1 provides a summary of the results when justices are uniformly distributed, for status quos at the ideal points of each of the justices; Figure 2 provides a summary of those results for a continuum of status quos; Figure 3 provides a summary of the size of the majorities for each strategy, for a continuum of status quos. Table 1 shows the results for liberal status quos; conservative status quos are the mirror image. Otherwise, Table 1, Figure 2 and Figure 3 each consider status quos for the entire ideological spectrum of the

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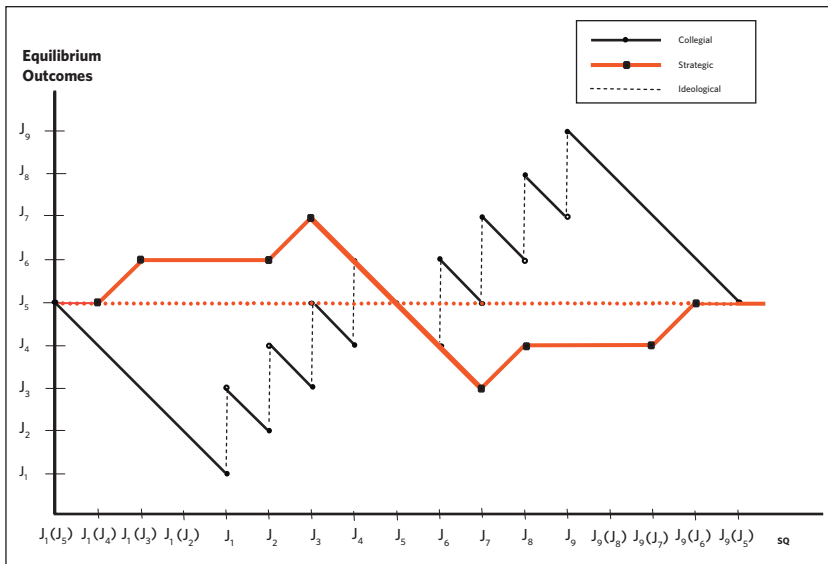


**Table 1. Predictions of the Three Models when Justices are Uniformly Distributed**

Status Quo	Ideological Model		Strategic Model		Collegial Model	
	Size of Majority	Outcome	Size of Majority	Outcome	Size of Majority	Outcome
J <sub>5</sub>	9:0*	J <sub>5</sub>	9:0 *	J <sub>5</sub>	9:0*	J <sub>5</sub>
J <sub>4</sub>	5:4	J <sub>5</sub>	5:4	J <sub>6</sub>	6:3	J <sub>4</sub>
J <sub>3</sub>	6:3	J <sub>5</sub>	5:4	J <sub>7</sub>	7:2	J <sub>3</sub>
J <sub>2</sub>	6:3	J <sub>5</sub>	6:3	J <sub>6</sub>	8:1	J <sub>2</sub>
J <sub>1</sub>	7:2	J <sub>5</sub>	6:3	J <sub>6</sub>	9:0	J <sub>1</sub>
J <sub>1</sub> (J <sub>2</sub> )	7:2	J <sub>5</sub>	7:2	J <sub>6</sub>	9:0	J <sub>2</sub>
J <sub>1</sub> (J <sub>3</sub> )	8:1	J <sub>5</sub>	8:1	J <sub>6</sub>	9:0	J <sub>3</sub>
J <sub>1</sub> (J <sub>4</sub> )	8:1	J <sub>5</sub>	8:1	J <sub>5</sub>	9:0	J <sub>4</sub>
J <sub>1</sub> (J <sub>5</sub> )	9:0	J <sub>5</sub>	9:0	J <sub>5</sub>	9:0	J <sub>5</sub>

\* 9:0 at J<sub>5</sub> exactly, 5:4 at  $\frac{J_5 + J_4}{2} < J_5 < \frac{J_6 + J_5}{2}$

**Figure 2. Equilibrium Outcomes for Ideological, Strategic and Collegial Models**



Court, and also for status quos extending beyond the most extreme liberal and conservative justices on the spectrum, to the point that is the ideological mirror of the median, to the left (right) of the most liberal (conservative)

justice. The Figures use the terms  $J_1(J_i)$  to represent a case outcome at the point to  $J_1$ 's left that makes  $J_1$  indifferent between it and  $J_i$  on  $J_1$ 's right (and the equivalent for  $J_9(J_i)$ ).<sup>22</sup>

Figure 2 plots the equilibrium outcomes for the three models on the y-axis, for a spectrum of status quos on the x-axis, ranging from an extreme liberal status quo at  $J_1(J_5)$ —the point of indifference on  $J_1$ 's left that is equivalent to  $J_5$  on  $J_1$ 's right—through to the equivalent point on the right,  $J_9(J_5)$ . In addition to the position of the status quo, the position of each justice is arrayed on the x-axis.

All of the predictions are unique: that is, every position of the status quo results in a single prediction of the case outcome and coalition size. For any status quo, the ideological model predicts that the outcome will be at the median's exact ideal point; consequently, the full range of equilibria predicted by the ideological model is a horizontal line at  $J_5$ .

In contrast, the strategic model predicts that the further a status quo lies to the left of  $J_5$ , the more outcomes will be pulled to the right. This is because the right-leaning majority can leverage the distance between  $J_5$  and  $SQ_x$ —between the median's ideal point and the status quo to the median's left—to reach an outcome that she is still indifferent to as against the status quo. Similarly, the more a status quo is to the right, the more left-leaning the outcome will be. However, beyond a certain point, when a status quo becomes extreme in relation to the Court's overall preferences, the outcome will trend back towards the median's preferences. This is because for extreme liberal (conservative) status quos, more liberal (conservative) justices will be willing to join the majority than for a moderately left-leaning (right-leaning) status quo, and so the majority coalition's preferences will trend back towards the ideological middle of the Court.

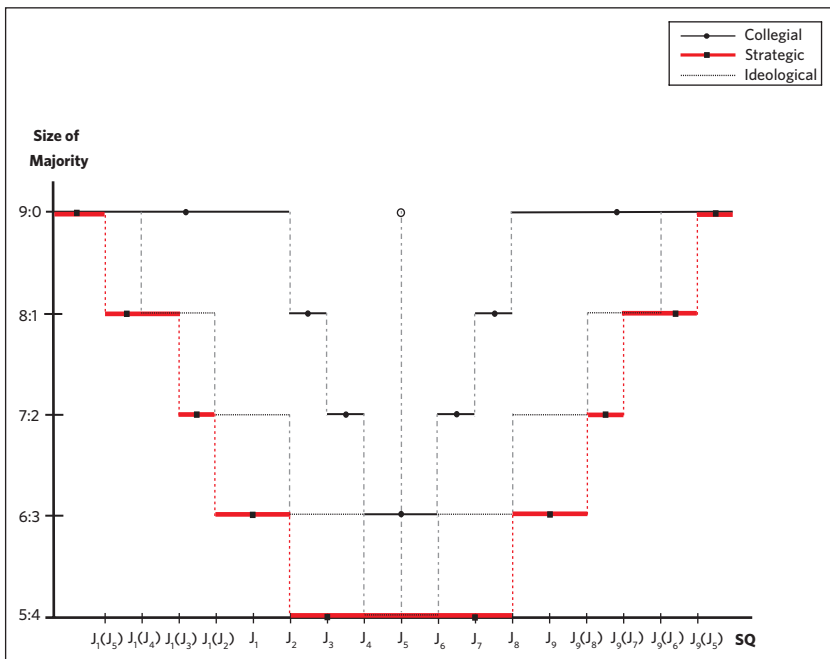
In almost direct opposition to the strategic model's predictions, the collegial model predicts that the further to the left a status quo lies from the median, the more left-leaning the majority coalition case outcome will be. This is because in order to convince as many justices as possible to join the majority opinion, the majority coalition will be willing to placate the marginal left-wing justice: the justice who is closest to the status quo. In order for this marginal justice to join the coalition, the case outcome must be only as far to the right of the status quo as the marginal

22 In section II, the results in Figure 2 are presented for the case where justices are not uniformly distributed and case outcomes occur on a full continuum.

justice is left of it. When the marginal justice is to the right of a left-wing status quo, the equilibrium outcome will be equal to the marginal justice's ideal point; when the marginal justice is to the left of the status quo, the outcome will be equal to the point to the right of the marginal justice where she is indifferent between the status quo and the outcome:  $J_{\text{marginal}}(M_x)$ . Thus overall, more left-wing status quos will result in more left-wing outcomes, but the outcomes predicted by the collegial model will be discontinuous, as indicated by the dashed lines. This is because the leveraging back towards the middle that was seen in the strategic model's results operates to a smaller extent under the collegial model, in the range between where the status quo equals the marginal justice's ideal point and the point where a more left-wing justice becomes the marginal justice.

47 Figure 3 shows the size of the majorities for a spectrum of status quos under the three decision-making models. The y-axis is now the equilibrium coalition size; the x-axis is again a spectrum of status quos, ranging from the extreme liberal status quo at  $J_1(J_5)$  through to the extreme

**Figure 3. Equilibrium Majority Sizes for Ideological, Strategic and Collegial Models**



conservative status quo,  $J_9(J_5)$ , and justices  $J_1;J_9$ . As expected, the collegial model results in the largest coalitions for a given status quo: for status quos between  $J_4$  and  $J_6$ , the outcome is 6:3, compared to 5:4 for the other models; it quickly rises to 9:0 when status quos are to the left of  $J_2$  or the right of  $J_8$ . The strategic model has unanimous opinions only outside the ideological range of the Court: when status quos are to the right of  $J_9(J_5)$  or the left of  $J_1(J_5)$ . Although the ideological model is a minimum winning coalition model, this does not of course mean that only a minimum coalition of five is actually reached in any case. In fact, the ideological model has coalition sizes consistently larger than the strategic model, although less than the collegial model.

### C. Implications and Testable Hypotheses

The only point of agreement of all three models is that under each, narrow majorities cluster when status quos lie at the center of the Court, and broader Court consensus exists for status quos that are more extreme. This makes intuitive sense: more extreme facts are likely to give rise to greater agreement among the justices that change is necessary. The only exception exists when the status quo is exactly equal to the position of the median justice, in which case all of the justices will be indifferent between the alternatives available to them, and each model predicts unanimous judgments. As discussed, this is a somewhat trivial result, arising because every justice is indifferent between the status quo and an outcome at the median. Nevertheless, it does contradict some scholars, who predict that unanimous outcomes will only arise for extreme status quos (see Songer and Roy, 2005).

The differences among the three models apparent in Table 1 and Figures 1 and 2 are more interesting than their similarities. First, while the size of the majority varies under the ideological model, the ideological placement of the Court's ruling is consistently at the median. This provides a clear testable implication for the accuracy of the assumptions in the ideological model. The heterogeneity in the ideological positions of Supreme Court rulings that other scholars have unearthed (see e.g. Cross, 2007), along with evidence that some medians regularly dissent or concur (see Epstein and Jacobi, 2008; Carrubba et al, 2008) poses somewhat of a challenge to the assumption of purely ideological judicial voting behavior. It suggests that justices may not be willing to sign on to *any* outcome

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that is closer to their preferences, in favor of maintaining their dissenting positions.

50 Second, unsurprisingly the collegial rule considerably expands the size of majorities. In fact, under the collegial rule, we only see split opinions when the status quo lies within the spectrum of judicial ideology, excluding status quos at the exact median. Any status quo that is more liberal than the most liberal justice, or more conservative than the most conservative justice, results in a unanimous opinion.

51 The most striking fact about the collegial model is that its results are discontinuous. The coalition size continually expands as status quos become more extreme, and consequently the equilibrium outcome tends toward the ideological preferences of the extreme justices. But in every interval between the cut-point of the inclusion of a new justice and the next such cut-point, the equilibrium outcome is leveraged back toward the moderate justices. This prediction of discontinuity in case outcomes also provides a clear testable implication for the collegial model—of whether such cut-points appear.

52 Third, the strategic and collegial models both predict the median justice to have strong influence for status quos clustering near the median's ideal, and for that influence to be less for less moderate status quos; they also predict that the influence for the median will resurge for status quos that are extreme relative to the ideology on the Court. But the two models have reverse predictions for the direction of the trends in the equilibrium outcomes in between those two ranges. The collegial model predicts that liberal status quos will result in liberal outcomes, whereas the strategic model predicts that liberal status quos will result in conservative outcomes. The strategic model predicts this effect because liberal status quos give conservative justices the ability to sway the pivotal median justice to a conservative outcome that is nevertheless closer to the median justice's preferences than the liberal status quo is.

53 This leveraging effect is operative on the collegial model, but only for status quos in the interval between judicial ideal points, as discussed above. Other than between these intervals, the collegial model sees liberal justices as able to force liberal outcomes; otherwise the liberal justices can threaten to defect, and since the majority always wants to expand the coalition, liberal status quos will result in liberal majorities. This result runs somewhat counter to analysis by Edelman and Sherry (2000), who show that "the willingness of the majority to compromise for additional votes should decline

with the increasing size of the majority.”<sup>23</sup> Scholars have also found a higher likelihood of vote switching towards joining a majority than away from it, particularly when the minority is small in number (Dorff and Brenner, 1992; Brenner, Caporale, and Winter, 1996),<sup>24</sup> suggesting that large majorities should need to cede less ground in order to pick up additional votes.<sup>25</sup> In contrast, the collegial model concludes that even when a majority has the support of eight justices, it will be willing not only to move the case outcome in the *direction* of the lone potential dissenter’s preferences, but in some cases to move the outcome to her *ideal point*, which is the most extreme point in the Court’s ideological spectrum. As such, this prior empirical work is in tension with the assumptions underlying the collegial model.

In essence, the collegial model predicts that incremental change occurs—a liberal status quo will result in a slightly less liberal case outcome. Status quos lying between  $J_1$  and  $J_2$ , for example, will result in case outcomes ranging between  $J_2$  and  $J_3$ . Thus each case outcome is more moderate than its catalytic status quo, but only moderately so. Whereas the strategic model predicts large changes to occur, because the extent that a status quo is liberal will reflect the extent to which the majority coalition can leverage the marginal justice’s indifference, and thus the extent that the resulting case outcome is conservative. So the change will be *double* the distance between the median and the original status quo. In contrast, the ideological model predicts only change equal to the distance between the median and the status quo, since each outcome moves from the status quo to the median. Interestingly, this order of collegial-ideological-strategic in size of change in case outcomes is also reflected in the order of the majority coalition sizes:

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23 This is supported by an account by Rehnquist (2002: 264): “The willingness to accommodate on the part of the author of the opinion is directly proportional to the number of votes supporting the majority result at conference; if there were only five justices at conference voting to affirm the decision of the lower Court, and one of those five wishes significant changes to be made in the draft, the opinion writer is under considerable pressure to work out something that will satisfy the critic, in order to obtain five votes for the opinion...But if the result at conference is reached by a unanimous or a lopsided vote, a critic who wishes substantial changes in the opinion has less leverage.” See also Murphy (1964, 58).

24 Majority justices change their vote 5.5% of the time, whereas minority justices change their vote 21.6% of the time; a majority justice has a 0.9% probability of switching, whereas a lone dissenter has a 36.8% probability of switching—Brenner, Caporale, and Winter (1996: 248). See also Maltzman and Wahlbeck (1996: 589, 591), who find similar results, but put the probability of switching for a lone dissenter at 15.2%.

25 These results could be a product of majority opinion writers amending their draft opinions ex ante in order to take into account the preferences of marginal justices, but this explanation does not account for the differences observed in the switching rate among different-sized minorities.

the collegial model predicts large majorities, the strategic model predicts smaller majorities, and the ideological model lies in between.

55 This result is somewhat surprising, given that the collegial and the ideological models are extreme opposites in the mechanism by which case outcomes are determined. The ideological model predicts total domination by the median; at the opposite extreme, the collegial model expects enormous influence on the part of the extremist justices, as it predicts that unanimous decisions will occur everywhere except for status quos lying within the range of preferences of the center five justices. The collegial model only recognizes the leverage the moderate justices could have to propose more centrist alternatives to the extent that the proposed alternative makes the extremist justices indifferent between the status quo and change. The strategic model captures more of the moderate justices' leveraging ability, without assuming away all normative judicial constraints.

56 The next sub-section considers the effect on the models of weakening the assumption that an undecided justice has to choose between supporting the majority ruling or dissenting in favor of maintaining the status quo, by considering the possibility that judges can also concur. Then section II relaxes the uniformity assumption and the assumption of status quos occurring at the justice's ideal points.

#### D. The Impact of Concurrences

57 It is possible to develop a decision-making rule for concurrences, and assess the impact of concurrences on the above results. The results of the ideological model and collegial model will not be affected by concurrences. But the strategic model will be affected. Applying the previous logic of the strategic model then, a concurrence rule is:

$$\text{Concur at } C_x \text{ if } (J_i - M_x)^2 > (M_x - SQ_x)^2.$$

58 That is, for Justice  $i$ , if the difference between the concurrence point and the proposed outcome is greater than the movement the new majority offers from the status quo toward Justice  $i$ 's preferences, then Justice  $i$  will concur. For a lone concurrence, Justice  $i$  will concur at  $J_i$ , or if more than one justice concurs, Justice  $i$  will concur at the point that satisfies the normal coalition rule for the potential concurring coalition, i.e.:

$$\text{Concur at } C_x \text{ if } (J_i - M_x)^2 > (M_x - SQ_x)^2.$$

Where  $C_x = f(M_x, J_1, J_2, \dots, J_9)$  such that  $(J_i - M_x)^2 > (J_i - C_x)^2$ .

for any  $J_i$  where  $(J_i - M_x)^2 > (M_x - SQ_x)^2$ .

A concurrence rule also requires a rule of response to the concurrence, to see whether the majority will change their position under the threat of a justice leaving the majority to concur. The strategic response rule of justice  $k$ , a majority justice, to a threatened concurrence is:

Maintain support for  $M_x$  over  $C_x$  if  $(J_k - C_x)^2 > (J_k - M_x)^2$ .

The effect of the possibility of concurrence does not affect the equilibrium position of the case outcomes under any of the models. It also does not affect the size of the coalitions under the ideological or collegial models. It does, however, change the size of the coalitions under the strategic model, but only for moderate status quos. The differences are:

1. When the status quo is exactly at  $J_5$ , instead of a 9:0 majority at  $J_5$ , there will be:
  - a three justice coalition (justices  $J_4$ ;  $J_6$ ) for an outcome at  $J_5$ ;
  - justices  $J_1$ ;  $J_3$  will concur at  $J_2$ , and justices  $J_7$ ;  $J_9$  will concur at  $J_8$ .
2. When the status quo lies between  $J_5$  and  $\frac{J_5 + J_4}{2}$ , instead of the outcome tracking  $SQ(J_4)$  with a 5:4 majority, it will be:
  - a 4:4 split, with  $J_9$  concurring at  $J_9$ .
3. When the status quo lies between  $\frac{J_5 + J_4}{2}$  and  $J_4$ , the outcome will continue to track  $SQ(J_4)$ , but instead of a 6:3 coalition emerging, it will be:
  - a 5:3 split, again with  $J_9$  concurring.
4. When the status quo lies between  $J_4$  and  $\frac{J_4 + J_3}{2}$ :
  - $J_8$  will join  $J_9$  in concurrence.
  - For status quos less than  $\frac{J_4 + J_3}{2}$ , the strategic model incorporating concurrences is identical to the strategic model without concurrences.

What these results show is that while treating judicial choice as if it was between joining a majority or dissenting at the status quo is somewhat artificial, it does not drastically affect the results. This result is generally consistent with empirical work.<sup>26</sup> The reason for this is that the strategic model has already largely taken into account threats to defect: it entirely

26 See e.g. Edelman and Sherry (2000) who find a “bandwagon effect” which makes lone dissenters more likely than any other justices to switch their votes, and minorities of two more likely to switch than minorities of three (minorities of four are an exception, and are more likely to switch than minorities of three). Similarly, see Brenner, Caporale and Winter (1996) who show that vote-switching between the conference vote and the final vote constituting the decision is more likely to occur in the direction of switching to the majority coalition; unanimous coalitions are particularly unlikely to experience vote switching. See also Dorff and Brenner (1992: 772) who find that “the change from a narrow majority to an overwhelming majority more than doubles the probability of a switch occurring,” and is considerably higher for highly salient cases.



captured threats to defect in the opposite direction to the proposed majority outcome; this extension captures threats to defect when the equilibrium outcome is in the preferred direction of the potential concurees. Giving the justices a choice to concur never actually changes the majority outcome, although this extension does explain the observance of split opinions.

### 3. APPLYING THE MODELS TO THE REHNQUIST AND ROBERTS COURTS

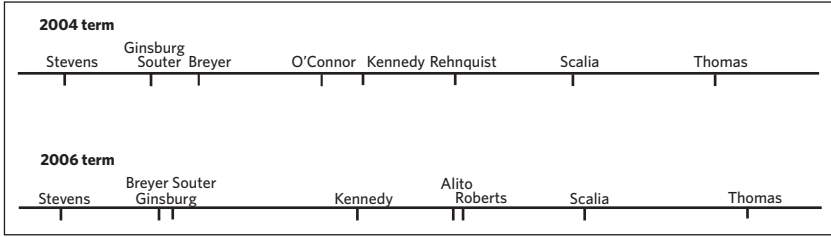
63 This section illustrates the different predictions of the ideological, collegial, and strategic models by applying them to the Rehnquist and Roberts Courts. Undertaking this analysis requires a valid estimate of the justices' ideological points; I use Martin and Quinn's (2002) measure of ideal points of Supreme Court justices, which provides a constant standard of judicial ideology.<sup>27</sup> Figure 4 shows that on the Rehnquist Court, Justices O'Connor and Kennedy are in the middle of the Court, but their scores show them to be historically more conservative than the average Supreme Court justice—approximately 0—which accounts for the general sense that the Court was more conservative in the 1990s than at other times.<sup>28</sup> Not surprisingly, Justices Scalia and Thomas and Chief Justice Rehnquist are on the conservative end of the spectrum, and Justices Stevens and Ginsburg at the liberal end. In the Roberts era, Chief Justice Roberts and Justice Alito are close to Chief Justice Rehnquist's prior position, indicating a rightward move of the Court with Alito replacing O'Connor.

64 Figures 5 and 6 present the equilibrium positions of majorities for a continuum of status quos under the Rehnquist and Roberts Courts. This covers double the ideological spectrum of the nine justices, ranging from the distance to Stevens's left equal to his distance from O'Connor to his right, through the full judicial spectrum, and to the point to Thomas's right that mirrors O'Connor's position to his left. Anything further to the extreme left or right produces no change. As in Table 1, the data in Figure 5 displays the "cut-point outcomes," which has the effect of smoothing out the discontinuity in the collegial model. This is done purely for simplicity in representation: the discontinuity is still in effect.

27 See footnote 32 and accompanying text *infra* for further discussion.

28 See e.g. Joan Biskupic, *Rehnquist left Supreme Court with conservative legacy*, USA TODAY (Sept. 4, 2005), available at [http://www.usatoday.com/news/washington/judicial/supreme/Courtjustices/2005-09-04-rehnquist-legacy\\_x.htm](http://www.usatoday.com/news/washington/judicial/supreme/Courtjustices/2005-09-04-rehnquist-legacy_x.htm)

**Figure 4. Martin-Quinn scores for the Rehnquist and Roberts Courts**



**Figure 5. Equilibrium Outcomes for the Three Models for the Rehnquist Court**

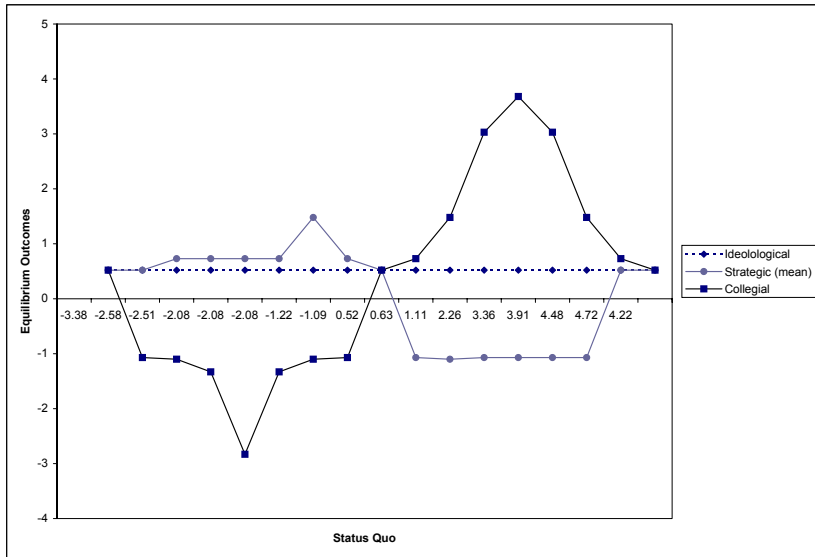
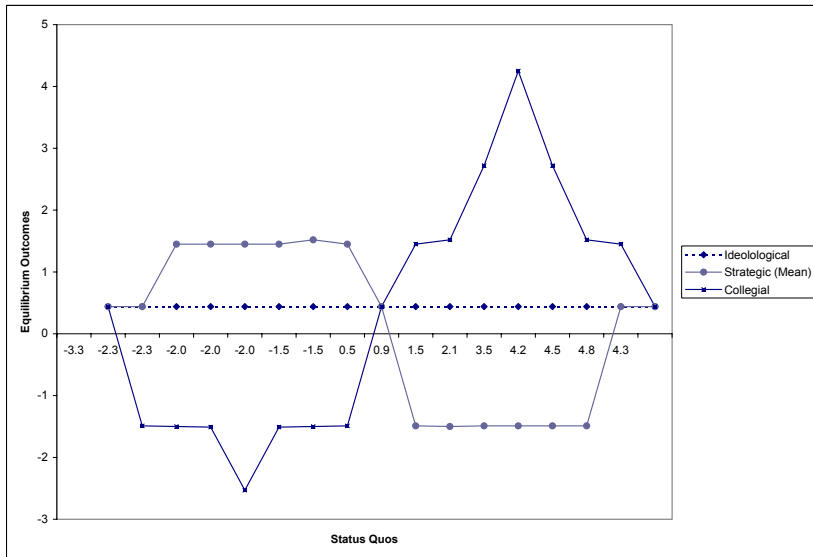


Figure 5 is based on the average Martin-Quinn scores for each Justice over the 10 years between 1994 and 2004, during which the Rehnquist Court membership was stable. Figure 6 is based on the average Martin-Quinn scores for each Justice in 2005 and 2006, excluding Justice O'Connor, who left part way through the 2005 term. The x-axis for each Figure is the possible range of status quos, expressed on the Martin-Quinn scale. The y-axis for each Figure is on the same scale, but represents the predicted outcomes for each measure.

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The two figures are a simplified snapshot of the three measures' predictions of the Rehnquist Court and the Roberts Court: because Figure 5 uses an average score for the entire Rehnquist era illustrated, it does not capture the variation that occurs as O'Connor and Kennedy jostle for the position

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**Figure 6. Equilibrium Outcomes for the Three Models for the Roberts Court**

of Court median, or the fact that O'Connor's ideology becomes gradually more liberal over time. Nevertheless, the two figures show the most important results.

67 In both Figures, the Ideological model predicts fairly stable case outcomes, at O'Connor's and Kennedy's respective ideal points. This model predicts that in the Rehnquist era, for every issue that O'Connor was the median, she should always have achieved her preferred outcome. For some years of the Rehnquist Court, Kennedy is the median—in those years, the ideological model predicts that all outcomes should reflect Kennedy's ideal point. Except when there is a change in who the median is, case outcomes should only vary to the extent that the median's ideology varies.<sup>29</sup>

68 In contrast, the strategic model is much more sensitive to changes in the Court's composition. When status quos are moderately conservative, under the strategic model the ideological proximity between Souter and Breyer flattens out the range of equilibrium outcomes for most of the right-hand side of the graph. The proximity between Kennedy and O'Connor renders the left-hand side of the graph almost identical to the median voter

29 In fact, O'Connor's Martin-Quinn ideology score becomes more liberal over time, particularly after 2000.

model, with the exception of the single peak resulting from the influence of Rehnquist. The strategic model, then, suggests outcomes will cluster at three points: O'Connor at the median, Souter/Breyer's virtually identical ideal point, and some liberal status quos will result in outcomes that most closely reflect Rehnquist's preferences.

In contrast again, no Justice dominates under the collegial measure; each Justice gets exactly what they want for some status quos. Movements in case outcomes reflect the direction of the expansion of the coalition in each case: more liberal status quos result in liberal case outcomes. 69

The strategic measure differs from both the ideological and collegial measures in that it is much more sensitive to changes in the Court's personnel. The more divided Roberts Court, with Kennedy at the center of an otherwise polarized Court, results in more conservative and more liberal case outcomes than occurred in the Rehnquist Court. Now, whichever group of four Kennedy joins forces with in any case gets to pull the outcome much further in their preferred direction than was the case under the Rehnquist Court. But the extremes of the Court—Justice Stevens on the left and Justices Scalia and Thomas on the right—have little influence on the placement of case outcomes, according to the predictions of the strategic measure. 70

Applied in this way to specific Supreme Court eras, these models raise empirically testable hypotheses. During the stable Rehnquist decade, we should see outcomes consistently at O'Connor's and Kennedy's preferences, according to the ideological model, and at Kennedy's preferences exclusively during the Roberts era. Whereas the collegial measure predicts that we will see the full range of Supreme Court justices' preferences reflected in both eras. Finally, the strategic measure predicts that we will see outcomes clustering at three points in the Rehnquist era—at the ideal point of O'Connor-Kennedy (who are almost indistinguishable), Breyer-Ginsburg-Souter (who are similarly alike) and Rehnquist. And in the Roberts era, outcomes will cluster again at Kennedy's ideal point, at Breyer-Ginsburg-Souter's shared preference point, and at Alito-Roberts's shared outcome preferences. Jacobi and Sag (2009) test these empirical implications; here, I next develop three measures of case outcomes that can be utilized in empirical analysis, based on the three models developed in section I. These measures are then applied to a specific empirical question, to illustrate their differences, and so display the effect of making assumptions about judicial behavior. 71

#### 4. CREATING MEASURES OF CASE OUTCOMES FROM THE MODELS

72 Despite increasing empiricism in the study of judicial politics and behavior (see Epstein and King, 2002), the primary measure used for case outcomes is primitive. Essentially, the standard measure of case outcomes is to use Spaeth's United States Supreme Court Judicial Database coding of whether a case is liberal or conservative—according to whether the case outcome was, for example, pro-person convicted of crime, or pro-civil rights claimant.<sup>30</sup> But case facts and the questions of law they present are not dichotomous; they represent the breadth of legal inquiry. As Bailey (2002) characterizes it, the current approach is like equating two students who each get 80% of answers correct on math exams, despite one student having been examined on arithmetic and the other on algebra. Similarly, one case labeled “liberal” may be far more liberal than another case with the same label. Treating these two cases as identical is unsound in principle and potentially misleading in practice.<sup>31</sup>

73 Traditionally, judicial ideology was measured in a similarly simple manner, by counting the number of case outcomes categorized as liberal that each judge decided and contrast them to the number of cases decided that are labeled conservative (e.g. Epstein, Walker, and Dixon, 1989).<sup>32</sup> Recently, Martin and Quinn (2002) developed a sophisticated and direct measure of ideal points of Supreme Court justices. Combining these scores with information in Spaeth's database on case coalitions offers an opportunity to develop similarly sophisticated measures of case outcomes.

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30 See Harold J. Spaeth, *The Original United States Supreme Court Judicial Database 1953-2005 Terms Documentation*, Variable 31 direction of decision. See footnote 6 *supra* for more detail.

31 It is not safe to assume that these defects will average out in the long run. For instance, imagine a Court that succeeds a very liberal Court; its case determinations will appear to be very conservative on this simple scale, regardless of whether the new Court is moderate or conservative. This is because every case that amends a precedent of the previous era will register as a movement in a conservative direction, regardless of whether the cases are at the opposite ideological extreme of the liberal Court, or moderate adjustments of the precedents established by the previous Court. For other criticisms, see also Kritzer, Pickerill, and Richards (1998).

32 An alternative approach is to use proxies for judicial ideology—such as using the ideological score of the appointing president or the ideal point of the Senator able to exercise senatorial courtesy (Giles, Hettinger and Peppers, 2001)—or indirect measures—such as media reporting, with content analysis of newspaper editorials (Segal and Cover, 1989). These measures may also have their own flaws: see Zorn and Caldeira (2003) for criticisms of the latter technique.

Martin and Quinn use voting coalitions to make inferences about the relative ideological placement of justices.<sup>33</sup> A justice who is often a lone dissenter in conservative cases will be ranked as more liberal than a colleague who sometimes joins her in 7-2 conservative decisions. Martin and Quinn base the measure on a rank ordering of justices on a constant standard, but the justices can change in their designation on this constant scale. This allows for historical comparisons among justices, as well as examining whether individual justices' ideal points change over time, which Epstein, Martin, Quinn, and Segal (2007) find they do. Thus, even though Justice Breyer was never on the Court with Justice Brennan, Breyer's scores can be compared to Brennan's because Brennan was on the Court with other justices who were on the Court with Breyer, such as Justices Scalia and Stevens. Therefore, the rank order measure simultaneously accounts for change over time and across justices for all years and so renders the ideal points of the justices a standardized comparison with one another over time. This measure marks an important advance in empirical measurement of judicial ideology.<sup>34</sup> This section and the following section develop three measures of case outcomes that are more sophisticated measures of case outcomes than mere labels "liberal" or "conservative," because they consider both coalition size and the degree to which cases are liberal or conservative. To do so, I leverage both Martin and Quinn's scores of judicial ideology and Spaeth's liberal-conservative coding.

33 More specifically, Martin-Quinn scores are estimated using a dynamic item response theory model which takes into account not just case outcomes, but also voting patterns in each term. Item response theory models are mathematical functions used to specify the probability of an outcome in terms of the underlying characteristics or latent traits of the subject of interest—here the justices' preferences. Martin and Quinn designate ideal points of each Supreme Court justice by modeling every imaginable combination of Supreme Court justices' preferences that could explain the pattern of cases over their study period. Martin and Quinn's measure is similar to Poole and Rosenthal's (1997) D-NOMINATE congressional scores, in that it is based on a rank ordering of justices and the standard is constant, but the justices can change in their designation on this constant scale. It is different to D-NOMINATE in that Martin and Quinn use Markov chain Monte Carlo methods to fit a Bayesian measurement model to designate ideal points of each Supreme Court justice that are allowed to vary in any pattern imaginable over time without restricting the movements to be linear.

34 One danger of using Martin-Quinn scores in this context arises if justices logroll on votes in different cases. This will affect both the coalition associated with a given case outcome, and also the Martin-Quinn scores, because those scores are based on prior case coalitions. It would increase the confidence intervals of the scores, and the subsequent predictions. The extent of this danger is, however, arguably quite small. Even justices who admit to many forms of strategic behavior—such as signaling, defensive denials and aggressive grants in certiorari—strenuously deny that logrolling on case outcome voting ever occurs—see Perry (1994)—as is understandable, since logrolling would constitute a fundamental breach of the Rule of Law.

75 Other efforts have also been made to come up with measures of the ideological placement of Supreme Court cases: scholars have used reversals (McGuire and Stimson 2004), and qualitative analysis of language that tends to show up in liberal or conservative opinions (McGuire and Vanberg, 2005). However, this work necessarily relies on often subjective coding. Not only may such coding be dubious or unreliable, it may also be unnecessary, as there is much more information in Spaeth's dataset than the traditional measure takes account of. In particular, as well as knowing whether a case has been labeled as liberal or conservative, we also know the size and composition of the majority in every case. As such, alternative and potentially superior measures of case outcomes can be developed, by taking into account the size and composition of the winning coalition, as the three models above do.

76 The three models of judicial decision-making developed above also all take into account the significance of the differences among different liberal outcomes, and among conservative outcomes. Unlike the traditional form of measurement, these models assume that a case that receives approval from the seven most liberal justices is less liberal than a case that receives approval from only the five most liberal justices. Thus they avoid the problem of wrongfully concluding that a Court is overwhelmingly liberal simply because it decided a high percentage of unanimous cases in a liberal direction due to an extremely conservative status quo. Assessments of Supreme Court activity should not be a function of the ideological placements of the questions that are presented to the Court, which can change systematically over time for many reasons: as a result of the non-independence of case selection by the Court; the discretionary cert. process more generally; changed external factors, such as the "war on terror"; or ideological shifts in the Court's constituency, to name a few.

#### **A. Operationalizing the Three Models as Measures of Case Outcomes**

77 Ideally, it would be possible to develop and utilize a measure of case outcomes that allows for variation in the underlying status quos of cases. The problem is that a measure of the status quo of a case prior to judicial action does not exist. But I can categorize cases by what is observable: differences in the extent to which a case outcome is liberal or conservative. That is, I can reverse the process: knowing what the judicial ideology scores are for each judge in the majority coalition of a case, the case outcomes should be a product of the views of the majority justices. Given this, each of the three models developed in section I tell us what ideological position the

case outcome should represent, according to the assumptions of each approach.

The three models have very different predictions, resulting from their different assumptions. By assuming ideological voting behavior, the ideological model predicts outcomes consistently at the median. By assuming collegial voting behavior, the collegial model predicts outcomes that tend towards the preferences of the extreme justices most marginal to joining the coalition. By assuming strategic voting by the majority and minority justices, the strategic model predicts outcomes that tend toward the preferences of the center of the majority coalition. To develop empirically useful measures of the ideological position of case outcomes from the three models<sup>35</sup> requires creating operationalizations that capture these comprehensive predictions—i.e. formulae summarizing each model’s predictions.

Finding an exact operationalization for the ideological model is extremely easy. That model consistently predicts that the outcome will be at the exact location of the Court median. The operationalization for the ideological measure is:

$$M_x = J_5 \text{ for all } SQ_x \in SQ$$

Operationalizing the collegial model is more complicated. When the status quo lies within the spectrum of the ideological makeup of the Court, the collegial model mimics a “last in” model. Then, the predicted outcome of the case is the ideal point of the most liberal justice to join the coalition when the majority coalition is conservative-skewed, and the most conservative justice to join a coalition when the coalition is liberal-skewed. When the status quo lies outside the ideological spectrum of the Court, the moderate justices possess greater influence, and draw the outcome back towards the median.

To operationalize the collegial model, let  $J_1(SQ_x)$  be the position to the right of  $J_1$  that makes  $J_1$  indifferent between that outcome and the status quo on  $J_1$ ’s left, and  $J_9(SQ_x)$  as the equivalent for  $J_9$ .<sup>36</sup> The operationalization for the collegial measure is:

$$M_x = J_k, \text{ if } J_1 < SQ_x < J_9$$

35 The measures only predict case outcome positions, not outcome-majority size dyads, as the models do. However the strategic and collegial measures do take into account coalition size.

36 This is the generalization for the term defined above,  $J_1(J_i)$ ; the difference arises due to relaxing the assumption of a uniform distribution of justices.



$$\begin{aligned} \text{where } J_k &= J_{i \neq j} \text{ s.t. } (J_k - M_x)^2 < (J_j - M_x)^2 \text{ for all } J_i \\ &\text{where } (J_i - SQ_x)^2 > (J_i - M_x)^2 \\ &= J_1(SQ_x), \text{ if } SQ_x < J_1 \\ &= J_9(SQ_x), \text{ when } SQ_x > J_9 \end{aligned}$$

82 That is, the case outcome will be equal to the ideological position of the most extreme justice (in the direction of the status quo) in the coalition when status quos are within the ideological range of the Court; and outcomes will track the indifference point of the most extreme justice (in the direction of the status quo) when outcomes are more extreme than the Court's ideological range. What this means is that liberal (conservative) justices have the most power when outcomes are moderately liberal (conservative), but their power decreases the more liberal (conservative) the outcome is, if the status quo is more extreme than the Court's collective preferences.

83 Until there is data available that gives us the status quos of cases prior to judicial action, however, we cannot actually utilize the collegial measure as is, because the status quo defines the conditionality of whether the outcome will equal  $J_1$ ,  $J_1(SQ_x)$  or  $J_9(SQ_x)$ . As such, we need a proxy. Proxies are potentially problematic because, by definition, since they are not perfect fits for the predictions of the models, there will be an error term involved in that translation. To the extent that any error is systematically biased, this could make the measure itself biased, rather than simply noisy. This will add to any noise or bias that may exist in the Martin-Quinn scores.

84 We can exactly replicate the collegial model when  $J_1 < SQ_x < J_9$ , since then  $M_x = J_k$ , where  $J_k$  is the most liberal justice of a conservative majority and the most conservative justice of a liberal majority. As long as the Supreme Court represents a fair range of ideological positions among the justices, then most cases can be expected to present status quos in the stated range. As such, the collegial measure proxy can simply be operationalized as the majority justice with the lowest ideological score when the decision is labeled conservative (since more conservative scores are positive and more liberal scores are negative), and the majority justice with the highest ideological score when the decision is labeled liberal. When the status quo is outside the stated range, the proxy will be inaccurate, but still in the right direction. Table 2 illustrates the extent of the deviation of the proxy from the model's protections.

85 Table 2 shows the collegial measure suffers from some level of heteroskedasticity: when  $J_1 < SQ_x < J_9$ , the measure is a perfect fit for the model's protections, but when  $SQ_x < J_1$  or  $SQ_x > J_9$ , the measure is skewed towards

**Table 2. Collegial Model Compared with a Proxy Measure if uniformly distributed**

Status Quo	Model prediction	Proximate Justice	Proxy Measure
$J_5 : (J_5 + J_4)/2$	$J_5$	$J_5$	$J_5$
$(J_5 + J_4)/2 : (J_4 + J_3)/2$	$J_4$	$J_4$	$J_4$
$(J_4 + J_3)/2 : (J_3 + J_2)/2$	$J_3$	$J_3$	$J_3$
$(J_3 + J_2)/2 : (J_2 + J_1)/2$	$J_2$	$J_2$	$J_2$
$(J_2 + J_1)/2 : (2J_1 - J_2)$	$J_1$	$J_1$	$J_1$
$(2J_1 - J_2) : (2J_1 - J_3)$	$J_1(SQ_x)$	$J_2$	$J_1$
$(2J_1 - J_3) : (2J_1 - J_4)$	$J_1(SQ_x)$	$J_3$	$J_1$
$(2J_1 - J_4) : (2J_1 - J_5)$	$J_1(SQ_x)$	$J_4$	$J_1$
$(2J_1 - J_5) : (2J_1 - J_6)$	$J_1(SQ_x)$	$J_5$	$J_1$

the extremes. The extent to which this is a problem depends on the distribution of status quos relative to the distribution of judicial preferences. When there is a wide distribution of ideological positions represented on the Court, and thus when extremists are far from moderates, there is little bias in the measure. Only when the justices are all closely clustered does the measure show bias, and then only when the status quo is extreme relative to the ideological range on the Court. Thus reliance on the collegial measure requires a belief in an assumption other than collegiality: scholars would also have to believe that the overwhelming majority of decisions lie within the ideological range of the Court; otherwise they can expect their measure to be biased.

The strategic model largely tracks the indifference point of the median justice relative to the status quo, but subject to constraints. The leverage that conservative (liberal) justices have when status quos become more extremely liberal (conservative) reaches its limits when the median can credibly threaten to switch sides and form a majority with the liberal (conservative) justices. This creates two bounds on the power of the majority justices to skew the equilibrium outcome toward their preferences: when either the status quo or the case outcome exceeds the third most conservative (liberal) justice (that is, the justice who is the median of a minimum winning coalition), the equilibrium outcome trends back towards the overall Court median.

87 The operationalization of the strategic model is:

If  $J_3 < SQ_x < J_5$ ,  $M_x = J_5(SQ_x)$ , if  $J_5(SQ_x) < J_7$ , and  $J_7$  otherwise

If  $SQ_x < J_3$ ,  $M_x = J_5(SQ_x) - J_3 + SQ_x$ , if  $J_7 > J_5(SQ_x) > J_6$ ,

$= J_7 - J_3 + SQ_x$  if  $J_7 > J_5(SQ_x)$

$= J_6$ , if  $SQ_x > J_1(J_3)$ ,

and  $J_1(J_3) - J_6 + SQ_x$  if  $J_1(J_3) > J_5$ , and  $J_5$  otherwise.

88 The reverse holds for conservative status quos:

If  $J_7 > SQ_x > J_5$ ,  $M_x = J_5(SQ_x)$ , if  $J_5(SQ_x) > J_3$ , and  $J_3$  otherwise

If  $SQ_x > J_7$ ,  $M_x = J_5(SQ_x) + J_7 - SQ_x$ , if  $J_4 > J_5(SQ_x) > J_3$ ,

$= J_3 + J_7 - SQ_x$ , if  $J_5(SQ_x) < J_3$

$= J_4$ , if  $SQ_x < J_9(J_7)$ ,

and  $J_9(J_7) + J_4 - SQ_x$  if  $J_9(J_7) < J_5$ , and  $J_5$  otherwise.

89 Clearly, the operationalization of the strategic model is far more complicated than the other two models. Unlike the ideological model (and to a lesser extent the collegial model), which has simple, easily intuitively grasped results, the strategic model cannot be exactly encapsulated in a one-line formula. This results from its more nuanced rule: the equilibrium outcome is a product not simply of the preferences of the justices in the majority, but the distance of the status quo relative to the proposed alternative for the minority justices. Although this renders it less elegant and parsimonious as an empirical measure, this very complexity may enable the strategic model to better capture reality than the other two models, as Jacobi and Sag (2009) find (discussed *infra*).

90 Again, because the status quo determines the outcome in the strategic model, a proxy is required. In spite of complexity of the results of the strategic model, it lends itself to a reasonably close and simple proxy. Essentially, the strategic model captures the negotiations among the majority justices, while accounting for the danger of defection by the moderate justices.<sup>37</sup> As such, the strategic measure can be largely encapsulated by the following proxy:

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37 This measure was initially proposed by Baird and Jacobi (2009).

$$M_x = \sum \frac{J_i}{n} = \text{for all } J_i \text{ where } (J_i - SQ_x)^2 > (J_i - M_x)^2.$$

i.e. the equilibrium case outcome will be the mean of the majority coalition. 91

As Table 3 shows, on a uniformly distributed ideological spectrum, the difference between the strategic predictions and the mean of the majority coalition is mostly between zero and the standardized interval between any two justices. Although there is some variance in the extent of the error expected from the measure, it does not display the level of heteroskedasticity that the collegial measure suffers from, whereby the error is greater when the status quo is more extreme. 92

A viable alternative variation on this measure is the median of the majority coalition. The possibility of using the median of the majority coalition as a measure received passing mention in Segal and Spaeth (2002: 434), an idea that was tested empirically by Westerland (2003).<sup>38</sup> Westerland found that the median of the majority was a viable measure, and in fact performed better than a measure using the author of the case opinion or the Court median, in predicting the probability that a justice will join the majority opinion (2003: 29).<sup>39</sup> Hammond (2009) argues that the median of the coalition measure is theoretically indefensible; however, to do so, he assumes that a “Justice will support an opinion if it is *at least as good for him at the status quo*,” which is the core assumption of the ideological model.<sup>40</sup> So Hammond only failed to find that the median of the majority 93

38 Westerland (2003: 13-14) arrives at the idea of the opinion representing the position of the median of the coalition by a quite different route. He considers that the justices may engage in dichotomous outcome voting before they engage in specific issue voting, since the Court must make a decision as to who wins the specific dispute. However, this explanation suffers from assuming that justices cannot switch sides, subject to the placement of the majority opinion (see discussion *supra*). It also requires an additional assumption of asymmetric preferences.

39 Consistent with this, Westerland also found that the probability of a given justice writing or joining a special concurrence when that justice is the median of the majority coalition is effectively zero (2003: 30).

40 (original emphasis). Hammond also critiques the median of the majority measure on the basis that there is no reason to think that the median of the majority coalition should have any greater leverage than any other Justice, unlike the median of the Court. This misunderstands the reason for using a mean or median of the majority measure: the Strategic model does not assume that an individual Justice whose ideal point is at that position has *leverage*, rather the mean or the median of the coalition is the *equilibrium outcome*, that arises because of the limits on the Court median’s leverage to achieve her ideal outcome by threatening the other majority Justices that she will switch sides otherwise.

**Table 3. Strategic Model Compared with a Proxy Measure**

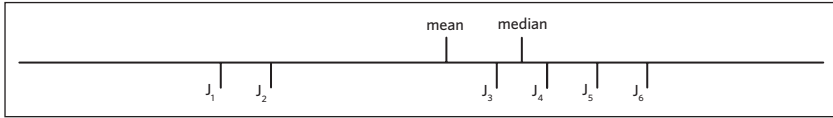
Status Quo	Model prediction	Proxy Measure
$J_5 : (J_5 + J_4)/2$	$J_5$	$J_5$
$(J_5 + J_4)/2 : (J_4 + J_3)/2$	$J_6$	$J_7$
$(J_4 + J_3)/2 : (J_3 + J_2)/2$	$J_7$	$J_7$
$(J_3 + J_2)/2 : (J_2 + J_1)/2$	$J_6$	$(J_7 + J_6)/2$
$(J_2 + J_1)/2 : (2J_1 - J_2)$	$J_6$	$(J_7 + J_6)/2$
$(2J_1 - J_2) : (2J_1 - J_3)$	$J_6$	$J_6$
$(2J_1 - J_3) : (2J_1 - J_4)$	$J_6$	$(J_6 + J_5)/2$
$(2J_1 - J_4) : (2J_1 - J_5)$	$J_5$	$(J_7 + J_6)/2$
$(2J_1 - J_5) : (2J_1 - J_6)$	$J_5$	$J_5$

coalition measure can be soundly theoretically derived because he assumed it away. Thus Hammond’s rejection of the median of the majority measure is premature.

94 Whether the mean or the median of the majority coalition will be preferable will depend on whether we expect right- or left-skewed distributions among the majority justices. If the Court is uniformly distributed, there is no difference between the median of the coalition and the mean of the coalition: in an odd-sized coalition, the middle Justice will be both the mean and median of the coalition; in an even-sized coalition, both the mean and median will be the midpoint between the two middle justices. If the Court is not uniformly distributed, which measure will be more accurate will depend on the extent of the diversity of the majority coalition. Figure 7 illustrates how the divergence arises; it represents only the justices in the majority coalition.

95 In the scenario illustrated in Figure 7, if the coalition is skewed such that the remainder of the Court—the minority justices—lie to the left of this majority coalition, the mean of the majority coalition is a closer proxy of the outcome the strategic model predicts. If on the other hand the remainder of the Court lie to the majority coalition’s right, the median of the

**Figure 7. The Mean Versus the Median of the Coalition Measure**



coalition is a more accurate proxy. This is because, as discussed, the mean of the majority measure is slightly but systematically skewed away from the median of the Court. Put another way, if the overall median of the Court is to the left of the mean and median—that is, the Court median is  $J_2$ —then the mean of the majority coalition measure creates less of this bias than the median does; whereas if  $J_5$  is the overall Court median, the median of the majority coalition will be a better measure.

Jacobi and Sag (2009) address the question of which version of the strategic measure better minimizes the heteroskedasticity described above. Examining all Supreme Court cases between 1953 and 2006, Jacobi and Sag find that the two versions of the strategic measure perform very similarly on a variety of tests, and have a correlation of 0.88, with  $p < 0.01$ . They conclude that both versions of the measure are viable.

To see the different effects of using the various measures—and thus to see the effect of the different assumptions scholars make about judicial behavior—the following section applies the measures to an empirical application.

## 5. APPLYING THE MEASURES TO AN EMPIRICAL ANALYSIS

This article has shown that different conceptions of judicial decision-making, and the implicit assumptions on which they rely, create varied expectations of what judicial behavior should be observed. Additionally, which mode of decision-making a scholar claims is at work will affect which empirical measure should be used when undertaking quantitative analysis. This is an important undertaking, since scholars are already using a variety of measures and proxies of case outcomes, often without recognizing the effects of the implicit assumptions about how judges make decisions that the use of such measures necessarily requires. This section illustrates the effect of using four measures—the traditional liberal-conservative measure, as well as the three measures proposed herein: the ideological, the collegial, and the strategic measures.

99 To do this, I have re-run Baird and Jacobi's (2009) analysis of how judicial signals affect subsequent judicial decision-making.<sup>41</sup> I chose this application because it is an analysis that ascertains an effect in terms of movements in Court outcomes, for which an accurate measure of case outcomes is essential. Thus this application allows examination of the effect of using different measures of case outcomes.

100 Baird and Jacobi examine dissenting judicial signals, in the form of cues in written dissenting opinions, of how a justice would like future similar cases reframed, so as to make it more likely that the dissenter will be able to garner majority support for his or her position in those later cases. In particular, Baird and Jacobi examine dissenting opinions—in eleven substantive policy areas between 1953–1986—that suggest that the case should have been decided differently on the basis of federal versus state power arguments, when the majority opinion does not discuss the federal-state relationship. The theory is essentially that litigants will interpret these cues as a signal to bring the Court cases with new facts and legal arguments made on the basis of federal-state power, to exploit the possibility that the dissenting judge in the initial case may be able to upset a consensus on the substantive issue by reframing the debate in terms of federalism.

101 Baird and Jacobi find a statistically significant and substantive increase in cases six years after dissenting signals are sent; this comports with expectations, given the time anticipated for there to be new relevant federal-state action, and for the resulting case to work its way through the lower Courts. Additionally, they find that a dissent based on federalism moves the overall direction of the Supreme Court in a given policy area after six years. These results are significant at the .05 level on a one-tailed test, which is appropriate since the anticipated effect is directional. These results are consistent with Baird's (2004, 2006) results, which produced similar findings in relation to signaling more generally—that is, beyond dissenting signals and signals in relation to only federal-state power. Re-running these results allows for an examination of the relative level of sensitivity of the four measures and the differences of the effects of the different assumptions about judicial behavior, in application.

102 The traditional liberal-conservative measure is theoretically weak, but has been used effectively in numerous studies. It could either underestimate

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41 Baird and Jacobi used the strategic measure, as an alternative to the traditional liberal-conservative measure. The additional analysis provided herein, using the other three measures, were not run by Baird and Jacobi's (2009).

or overestimate an effect because, by failing to account for the extent that a case is liberal or conservative, it will neither adequately capture large differences between very liberal and very conservative movements, nor appropriately downplay small differences. It may capture overall effects, but cannot necessarily be expected to fully capture the nuance of those effects. The strategic measure, on the other hand, differentiates between more and less liberal cases, and also integrates the influence of both the Court median and outlying judges. It should only over- or under-estimate an effect by a small range, as shown in Table 3. The collegial measure should overestimate the effect of the most extreme justices, but only for extreme cases. But to the extent that it is skewed toward the preferences of the extreme justices, it reflects only the least enthusiastic member of the given coalition's preferences. As such, it can be expected to under-estimate the effect of the movement and thus constitute a conservative measure. Finally, the ideological measure only captures differences in expected case outcomes when there is a change of personnel on the Court,<sup>42</sup> or a switch between which centrist justice is the median in any given year (see Epstein and Jacobi, 2008). As such, it is not expected to show much effect, and is also expected to be a conservative measure.

### A. Results

The traditional liberal-conservative measure, operationalized in terms of percentage of liberal cases, finds the predicted effect with statistical significance. The percentage liberal measure finds that conservative dissents move the Court in a conservative direction by 6.04%, and liberal dissents move the Court in a liberal direction by 13.58%. The p-values for this measure are .03 and .02 respectively—enough to establish the effect with confidence. 103

However, the percentage liberal measure also finds an effect in years 3 and 4 for conservative dissents, but not an equivalent effect for liberal dissents. For conservative dissents, in year 3 the Court moves 5.34% in a conservative direction, with a p-value of .053, and in year 4 there is an effect in a liberal direction of 5.56, with the p-value of .045. These anomalous results do not fit the theory—they could constitute noise, a challenge to the theory, or a challenge to the reliability of the traditional measure, particularly given its theoretical weaknesses. If the Baird-Jacobi theory is correct, then 104

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42 And only when that change affects the median – see Moraski and Shipan (1999).



the traditional measure is effective at capturing the effect with statistical significance, but the anomalous effects would be the result of its potential over-estimation, as posited above.

105 Using the strategic measure, the results show that conservative dissents move the Court in a conservative direction within the relevant subject area by .16 on the Martin-Quinn ideological scale, and liberal dissents move the Court in a liberal direction by .22. Both of these results are statistically significant at the .05 level. Given that the standard deviation of the means of the majority coalitions overall is approximately .50, these results show that a federalism dissent moves outcomes by approximately one third of the standard deviation of the whole scale. Thus the strategic measure shows a clear effect of the type predicted, without the anomalous results found by the traditional measure.

106 The collegial measure suggests a similar effect; however the results are not statistically significant. The collegial measure shows that conservative dissents move the Court in a conservative direction by .29 and liberal dissents move the Court in a liberal direction by .24 on the Martin-Quinn scale. However, the p-values on these effects are .32 and .51 respectively. Thus although the results are in the direction found by the other measures, they can not be determined with confidence using this measure. Once again, this could be because the effect is weaker than predicted; however this result also conforms with expectations that the measure will underestimate effects. As discussed, prior empirical evidence suggests that the collegial measure gives too much emphasis to the preferences of the extremist judges; so while it tracks the overall direction of the Court's actions, it may not fully capture that movement, as it reflects only the least enthusiastic member of the given coalition's preferences. As such, if the Baird-Jacobi theory is correct, the collegial measure under-estimates the effect, as was expected given that the likely bias of the measure was in only picking up movement by the extremist justices.

107 The ideological measure was not expected to capture much effect, since it predicts small differences due to individual justice's varying ideological scores but only predicts large differences when there is a change of personnel on the Court. This lack of effect was borne out in the results: no statistically significant effects of the type predicted were established using the ideological measure. Whereas the clearest effect was seen using the strategic measure, producing statistically significant coefficients of .16 and .22, the coefficients using the ideological measure were .01 and .10—the latter of

which is in the wrong direction—but neither of these results can be differentiated from zero.

Additionally, the ideological measure shows statistically significant effects in years 2 and 3 for conservative dissents, also in the wrong direction, but at substantively minuscule levels: .09 and .06 respectively. These additional effects are not only contrary to the results found with the traditional, strategic, and collegial measures, but are also opposite to the anomalous effects found using the traditional measure. The ideological measure failed to find any effect that is both statistically and substantively significant, as was expected due to its fairly static nature. These results do not tell us which measure is best; rather they simply illustrate that choosing among a variety of measures has a significant impact on empirical analysis. 108

Jacobi and Sag (2009) test the comparative virtues of each measure developed here, by comparing each measure as against other scores of case outcomes. They compare each outcome measure of Supreme Court cases between 1953 and 2006 as against the traditional liberal-conservative dummy variable categorization of case outcomes. They apply the same test to Supreme Court intellectual property cases decided in the same period. Looking at the discrete jurisprudence of intellectual property cases allows for both a doctrinal check against the empirical analysis, and it also provides a secondary empirical score of case outcomes. Sag, Jacobi, and Sytch (2009) developed a new outcome variable to categorize intellectual property cases as an alternative to the liberal-conservative label, based on whether the case decided for or against the intellectual property claim being asserted. 109

On each of these tests, Jacobi and Sag (2009) find that the two versions of the strategic measure perform better than any of the other measures. In looking at all cases, the ideological and strategic measures correlate strongly with the liberal-conservative score of case outcomes in the direction predicted at highly statistically significant levels. But the collegial measure has perverse results, with liberal case outcomes scores predicting conservative outcomes on the liberal-conservative dummy variable. In intellectual property cases, the ideological and strategic measures again predict outcomes in the right direction, but the ideological measure does not reach statistical significance. Since Sag, Jacobi and Sytch (2009) showed that intellectual property cases are highly predictable based on judicial ideology, we expect to see significant effects for intellectual property cases also. Once again, in intellectual property, the collegial measure had 110

perverse results. Based on these and a number of other tests, Jacobi and Sag (2009) conclude that the strategic measure is the best and most reliable measure of case outcomes.

## 6. CONCLUSIONS

111 The traditional measure of case outcomes suffers from a theoretical weakness in that it treats all liberal outcomes as the same, and all conservative outcomes as the same. We can improve on this measure. To do so, we do not need new coding; we need only take account of the information already available in the primary database already used by judicial scholars, Spaeth's U.S. Supreme Court database. We can utilize the information contained therein on case coalitions, along with Martin-Quinn scores of judicial ideology, to develop a case outcome continuum, rather than an imprecise dichotomy.

112 This technique could be adapted to produce a number of different scores, beyond the three considered here. The imperative is simply to determine what method of aggregation of justices' ideological scores should constitute the score of the case. This article proposed three possibilities: the median of the Court, the most marginal justice of the coalition, or the mean/median of the coalition. To determine which of these three, or some other measure, should be used, it is essential to make explicit the implicit assumptions necessarily contained in any measure of case outcomes.

113 To achieve this goal, this article provided formal models of three common theories of how justices make decisions, and examined the implicit assumptions within each. Certainly other assumptions about judicial behavior could be similarly modeled. The important point is to recognize that different assumptions produce significantly different models, consequent sets of predictions of expected case outcomes, and ultimately dictate which case outcome measure should be used. As section IV of this article showed, which measure is used has the potential to produce significantly different results in empirical analysis.

114 How should scholars decide between the available measures of case outcomes? First, they can look to the assumptions contained in each measure. Which measure scholars should use depends on whether they are convinced by the theory that justices vote purely ideologically, subject to norms of collegiality and consensus, or conditioned by credible threats to switch sides. Currently, most empirical judicial work is undertaken utilizing measures of

case outcomes without addressing the effect of the assumptions implicitly contained in such a choice. The models in this article are provided to illustrate those assumptions. Second, scholars can look to empirical results that indicate which patterns that the models predict have tended to be observed. For instance, the extent of variation in observed case outcomes has negative implications for the ideological model, whereas the existence of cut-points in case outcomes would have positive implications for the collegial model. Future work examining these patterns is planned.

One complication that may render empirically ascertaining which measure best fits the existing data difficult is that if judicial behavior varies—by subject matter, by justice, or over time<sup>43</sup>—such that the assumptions described herein only apply partially, or such that each of the models applies partially, all three measures proposed here will have problems. Undertaking this inquiry is nevertheless vital because this critique is true of all case outcome measures, including the traditional liberal-conservative measure that scholars commonly use. Even if judicial behavior is so individually idiosyncratic that any measure is unsatisfactory, this article has nevertheless taken an important step by rigorously examining the effect of assumptions that are commonly made about how justices decide cases.

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43 For discussion of the variation in the extent of joint opinion writing norm over time, see O'Brien (1999); regarding variation by justice, see Rehnquist (2002, 254): "all of us feel impelled to a greater or lesser degree to try to reach some consensus that can be embodied in a written opinion that will command the support of the majority of the members of the Court."

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