**Competing Models of Judicial Coalition Formation
and Case Outcome Determination**

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In numerous cases, including *Roe v. Wade*, 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 he was in the majority and thus able to assign the writing of the opinion. In the case of *Roe*, Burger is even said to have assigned the opinion when he was clearly in the minority, much to the protestation of Justice Douglas, the senior majority justice (Epstein and Knight, 1998). Furthermore, Burger was able to convince the Court to have the case re-heard when two new justices could join the decision-making process. However, the strategy backfired, as the eventual opinion was considerably more distant from Burger's own preferences than the opinion initially circulated after the first hearing had been (ibid.).

What these episodes 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 case outcome. Additionally, these episodes suggest that the role of judicial norms, including but not limited to those relating to opinion assignment, can be influential on judicial outcomes, although these norms are apparently not always followed.

Even without the complication of re-hearings, freshly confirmed justices, and breach of judicial etiquette, majority coalition formation and case outcome determination are complex processes. In particular, this Article explores two of these complexities. The first is the simultaneity in effect of coalition formation and outcome determination upon each other. The second is the inherent trade-off between the ideological positioning of case outcomes and the breadth of coalition formation.

Due to the first complexity, any equilibrium will be an outcome-coalition diad. Due to the second complexity, what those equilibria will be will depend on the decision-making rule that balances that trade-off. Which decision-making rule is operative will depend in turn upon judicial norms, or their absence.

I formally explore 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 represents an attitudinalist notion of judicial decision-making; second, a maximum winning coalition, which captures theorized norms of joint opinion writing and collegiality; and third, a constrained ideological 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, constituting a strategic model of judicial decision-making.

Each of these models is capable of producing comprehensive predictions over a continuum of status quos, and can be operationalized as measures. The first measure captures the dominance of the median in median voter theories; 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 marginal justice in the coalition. Using an estimate of ideological preferences of justices that is constant over time, such as Martin and Quinn's (2002) measure of the dynamic ideal point of Supreme Court justices, these models can make comprehensive predictions about case outcomes under given court compositions. Additionally, they can be applied to empirical analyses of judicial ideology (see Baird and Jacobi, 2006).

A final point that is apparent from the initial illustration is that coalition formation and case outcome determination, in the form of opinion writing, is as much art as it is science. It is a product of charm, persuasion and other intangibles not captured in any of these models. As such, none of them will perfectly capture the many nuances of the

politics and personality that determine the exact placement of cases. Nevertheless, the measures developed use more information – in that they consider coalition size and composition – and so are more nuanced and likely to capture reality than the standard measure of judicial ideology – which looks only to whether a case is labeled "liberal" or "conservative" (see Jacobi and Baird, 2006).

I. Three Models of Judicial Decision-Making, Ideology and Coalition Formation

This section develops three formal models, which yield predictions over the placement and composition of majorities in the current Supreme Court. It assumes 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 (similar analysis for courts of first instance would be the facts as presented to the court). Each of the models considers judicial ideology in one dimension; this is not to deny that other dimensions may well be salient to traditional decision-makers, but this allows us to examine the relationship between ideological preference maximization and coalition formation most clearly. To the extent that other dimensions exist and are not independent of the ideology dimension, the findings will be affected.

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: although they are deciding whether to uphold a ruling or provide an alternative, justices can effectively write a

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dissent or concurrence at any ideological point.[1] I later discuss the impact of concurrences.

Additionally, the proposed majority position will itself be determined by the position of the status quo: whether five justices are willing to sign on to a majority opinion will depend on the ideological distance between the justice and the status quo versus the justice and the proposed majority ruling.

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

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

I assume that, when indifferent, a justice will join a majority. Thus J_i will join the majority if J_i prefers the majority outcome to the status quo.

$s^* = M_x$ iff $J_i - SQ_x > J_i - M_x$

$M_x = f(SQ_x, J_1, J_2, \ldots J_9)$ such that $J_i - SQ_x > J_i - M_x$ for at least $J_1{:}J_5$ or $J_5{:}J_9$.

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 do not mirror their own. I consider three decision rules that capture three contrasting approaches to this inherent trade-off.

First, I model the justices as pure "ideologues:" those who prefer that a majority outcome approximating their ideological position in favor of picking up a sixth vote. This decision-making rule is equivalent to a strategy of seeking a minimum winning coalition.

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[1] 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 balance of M_x. Here, I ignore this potential constraint; the results can be read as subject to the window allow by this limit. Similarly, other constraints may be operative, such as legal constraints, or the anticipated response of the elected branches, the public etc.

This first model captures the attitudinalist view of justices, which holds that justices decide cases predominantly by reference to there own political preferences (Segal and Spaeth, 1993).

Second, I model the justices as "collegiates:" those who will sacrifice ideological proximity in order to maximize the size of a majority, short of switching sides. This decision-making rule is reminiscent of a maximum winning coalition, with the outcome dependant on the "last justice in" to the coalition. This model captures the view that judicial decision-making is structured by internal judicial norms, particularly of collegiality (Edwards, 1998).

The third model requires some preliminary explanation. Under many decision-making regimes, a range of possible majorities will often be feasible; the more of an outlier SQ_x is in relation to the spectrum of judicial ideal points, the more viable majority alternatives will exist. As we have already seen, the equilibrium M_x will depend on rules of judicial decision-making, which represent a preference for ideology versus collegiality. But it is possible that a decision-making rule can be less absolute than the two considered above; I consider here two further possibilities.

When the marginal justice is indifferent, i.e. when s* is an equality, the marginal justice can credibly threaten to switch sides. If that marginal justice is the median, that threat involves forming a majority with the dissenting justices. The impact of this threat will shape the placement of M_x.

Whether this threat is really credible, however, depends on the willingness of the dissenting justices to play ball. Consider a simplified example where justices are uniformly distributed ideologues, and $SQ_x = J_1$: seven justice, J_3:J_9, prefer $M_x = J_3$, and

justice J_2 is indifferent. But six justices, J_4:J_9, also prefer any $M_x = J_4$:J_7 to SQ_x. But 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 credibility of this threat depends on J_1's willingness to vote for $M_x = J_5$ over $SQ = J_1$.

The logic is clear, but what is not clear is whether justices are willing to strategize to this extent. 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).

Rather than make assumptions about the nature of judicial conduct, I again consider different decision-making rules. The first is unconstrained best responses, under which the equilibrium strategy will be:

$$s^{\wedge} = M_x` \text{ iff } J_i - M_x > J_i - M_x`$$

This decision rule will result in identical equilibrium outcomes, regardless of whether justices are ideologues or collegiates.

The second decision rule is normatively constrained best responses. It dictates that J_i will not agree to an alternative majority, $M_x`$, if the distance between J_i's preferences and the status quo is less than the difference between the two proposed rulings:

$$s^{\wedge} = M_x` \text{ iff } J_i - SQ_x > M_x - M_x`$$

This second decision rule will result in different outcomes for ideologues and collegiates. Thus I present three sets of equilibrium outcomes resulting from the three different decision-making rules: unconstrained best responses of both ideologues and collegiates (UIC), normatively constrained best responses of ideologues (NCI), and normatively constrained best responses of collegiates (NCC).

To illustrate, I first generate full results for the reductionist model, with a spectrum of uniformly distributed justices, and outcomes occuring 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. Finally, I present the results for the Rehnquist Court, under Martin and Quinn's ideological measures (there is not yet data on the Roberts Court).

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. Thus J_5 will be the 9:0 equilibrium outcome under each of the decision-making regimes.

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. The results are more interesting when we consider a continuum of status quos. If $SQ_x = J_5$ +/- ε, the result will be a 5:4 judgment at $M_x = J_5$. 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 $SQ_x = J_5$ +ε, the result will be a coalition $J_1:J_5$ with outcome $M_x = J_5$. For $SQ_x = J_5$ -ε, the result will be a coalition $J_5:J_9$ with outcome $M_x = J_5$. These results apply for any $(J_5 - J_4)/2 < SQ_x < (J_6 - J_5)/2$.

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.

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 any $M_x` = J_5:J_8$ to $M_x = J_4$. Under the normatively constrained collegiate rule, because any movement further right than J_4 will result in a loss of a majority vote, the equilibrium outcome will be 7:2 majority at J_4.

Under the unconstrained rule, the equilibrium outcome will be a 6:3 majority at J_5, because J_5 can credibly threaten to switch sides if $M_x \neq J_5$. But under the normatively constrained ideological rule, J_1 and J_2 will not agree to support J_5's threat to defect, as for $M_x = J_6$ or J_7, the distance they would gain in moving the equilibrium closer to their preferences is less than the distance they lose, being on record supporting a position far from their preferences. A majority $J_2:J_6$ would prefer J_5 to J_8, but 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 1 provides a summary of those results 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 and Figure 1 each consider status quos including the entire ideological spectrum of the court, but also 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.

Table 1: Predictions of the 3 Models when Justices Uniformly Distributed

Status Quo	Unconstrained Ideologues and Collegiates		Normatively Constrained Ideologues		Normatively Constrained Collegiates	
	Size of Majority	Outcome	Size of Majority	Outcome	Size of Majority	Outcome
J_5	9:0*	J_5	9:0 *	J_5	9:0*	J_5
J_4	5:4	J_5	5:4	J_6	6:3	J_4
J_3	6:3	J_5	5:4	J_7	7:2	J_3
J_2	6:3	J_5	6:3	J_6	8:1	J_2
J_1	7:2	J_5	6:3	J_6	9:0	J_1
$J_1(J_2)$	7:2	J_5	7:2	J_6	9:0	J_2
$J_1(J_3)$	8:1	J_5	8:1	J_6	9:0	J_3
$J_1(J_4)$	8:1	J_5	8:1	J_5	9:0	J_4
$J_1(J_5)$	9:0	J_5	9:0	J_5	9:0	J_5

* 9:0 at J_5 exactly, 5:4 at $(J_5 - J_4)/2 < J_5 < (J_6 - J_5)/2$.

Figure 1: Equilibrium Outcomes for UIC, NCI and NCC Models
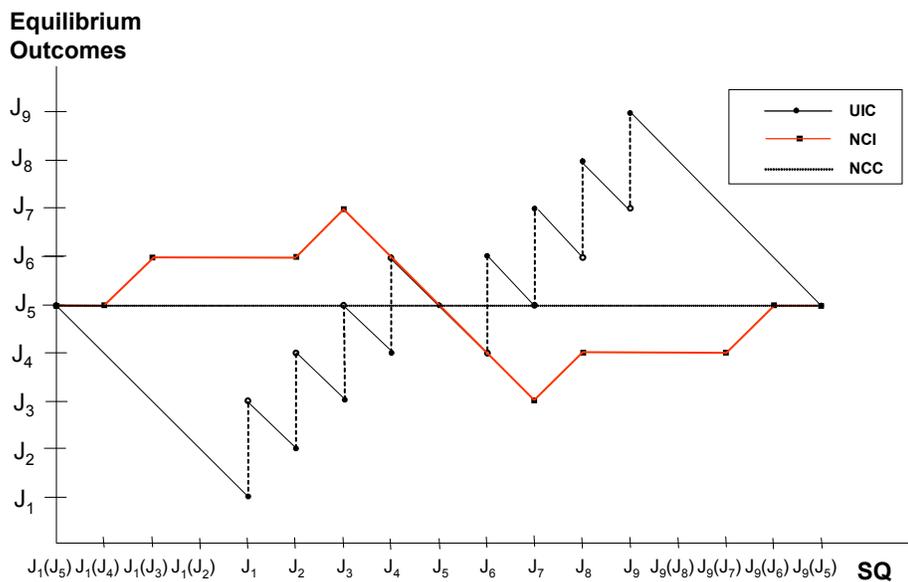
Some interesting results arise from Table 1 and Figure 1. First, while the size of

the majority varies under the unconstrained model, the ideological placement of the

court's ruling is consistently at the median. This suggests that the heterogeneity we see in the ideological positions of Supreme Court rulings (see e.g. Cross 2006) must stem in part from the unwillingness of justices to sign on to *any* outcome that is closer to their preferences, in favor of maintaining their dissenting positions. Consequently, there is reason to doubt whether the first model will provide a very accurate measure of judicial ideology.

Second, unsurprisingly the collegiate rule considerably expands the size of majorities. In fact, under the collegiate rule, we only see split opinions when the status quo lies within the spectrum of judicial ideology, excluding status quos at the exact median (which as discussed is a trivial result arising from the assumption relating to indifference and occurs only at one exact status quo). 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.

But the more striking fact about the collegiate 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 cutpoint of the inclusion of a new justice and the next such cutpoint, the equilibrium outcome is leveraged back toward the moderate justices. Intuitively, this result seems implausible.

Third, the constrained ideological and collegiate models show two similar patterns: in predicting the approximate size of the majority coalitions, and in predicting the greater influence of the median justices for moderate and extreme status quos, with the greatest influence of the outliers when status quos are extreme but within the

spectrum of judicial ideology on the court.

But the difference between these two models predictions is key: they have reverse predictions of the directions of the trends in the equilibrium outcomes for all other status quos. The collegiate model predicts that liberal status quos will result in liberal outcomes, whereas the constrained ideological model predicts that liberal status quos will result in conservative outcomes. This is because liberal status quos give conservative justices the ability to sway the pivotal median justices to a conservative outcome that is nevertheless closer to the median justices' preferences than the liberal status quo. This effect is only operative on the collegiate model for status quos in the interval between judicial ideal points, as discussed above.

It seems likely that judicial norms prevent the median justice from always ensuring that the outcome exactly represents her preferences; however it is overstating the power of judicial norms to suggest that they will prevent majorities from exploiting the ideological distance of extreme status quos to write opinions that better reflect the majority coalition's preferences. As such, the normatively constrained ideological model seems to better capture the trade-off between collegiality and ideology than the collegiate model does.

Finally, under all three models, narrow majorities cluster at the centre; broader court approval 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. The only exception is status quos that are 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 where status quos approximate the

median. As discussed, this is a trivial result, as every justice is indifferent between the status quo and an outcome at the median.

Overall, it seems likely that the normatively constrained ideologue model will best reflect observed judicial behavior. Unlike the unconstrained model, it predicts variation in outcomes, rather than total domination by the median. At the opposite extreme, the constrained collegiate model expects too much influence of the extremist justices, as it predicts that unanimous decisions will occur everywhere except for status quo lies within the preferences of the centre five justices. NCC predicts that for any status quo outside the ideological range of the justices will exactly reflect the most extreme justice's preferences. This ignores the leverage the moderate justices have to propose a more central alternative to the status quo that the extremist Justice will be indifferent to. The ideological model captures that interaction, without assuming away all normative judicial constraints. It explains observed variation in judicial behavior, fits with intuitive expectations of how majorities can leverage their strengths to obtain case outcomes that better fit their own preferences, and does not result in discontinuous outcome predictions. However, the greater nuance of the constrained ideological model makes it more difficult than the other two models to convert into a measure that is useful for empirical models.

I.A The Impact of Concurrences

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 unconstrained model and collegiate model will not be affected by concurrences. But the normatively constrained ideological model will be affected. Applying the previous logic, a concurrence rule for

the NCI model is:

Concur if $J_i - M_x < M_x - SQ_x$

That is, for Justice i, if the difference from the proposed outcome is greater than the movement the new majority offers from the status quo toward Justice i's preferences, then the Justice will concur. 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.

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 NCI response rule to a threatened concurrence is:

If $J_i - M_x\tilde{} > J_i - M_x\grave{}$, do not switch from $M_x\grave{}$ to $M_x\tilde{}$

The effect of the possibility of concurrence does not affect the equilibrium position of the case outcomes under the NCI model, but it does change the size of the coalition for moderate status quos. The differences are: 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. As the status quo moves towards J_4, 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. Then, as the status quo moves from J_4 to $(J_5 - J_4)/2$, the outcome will continue to track SQ(J_4), but instead of a 6:3 coalition emerging, it will be a 5:4 majority, again with J_9 concurring. When the status quo passes J_4, until it reaches $(J_4 - J_3)/2$, J_8 will join J_9 in concurrence. Beyond that point, the NCI model incorporating occurrences is identical to the NCI model without concurrences.

What this shows is that while the treatment of judicial choice as if it was between joining a majority or dissenting out the status quo is somewhat artificial, it does not drastically affect the results. Giving the justices a choice to concur does not change the outcome, though this extension does explain the observance of split opinions.

II. Creating Measures of Judicial Ideology from the Models

Despite increasing empiricism in the study of judicial politics and behavior (see Epstein and King, 2002), the primary measure available for this analysis is primitive. Essentially, the standard measure of judicial ideology – "a latent construct organizing a person's personal political attitudes" (Zorn and Caldeira, 2003) – is to count the number of case outcomes categorized as liberal and contrast them to the number of cases labeled conservative.[2] But case facts and the questions of law they present are not dichotomous, they represent the breadth of legal inquiry. Additionally, 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 dangerous in practice (see Bailey, 2002). Dissatisfied with current practices, scholars have come up with various measures of the ideological placement of Supreme Court cases, using only reversals (McGuire and Stimson 2004), or using a qualitative analysis of language that tends to show up in liberal or conservative opinions (McGuire and Vanberg Nd). However, even if we rely on the

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[2] In contrast to 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 – see Giles, Hettinger and Peppers (2001) – or indirect measures, such as media reporting, with content analysis of newspaper editorials – see Segal and Cover (1989), and see Zorn and Caldeira (2003) for comments.

traditional judicial ideology dataset, the United States Supreme Court Judicial Database,[3] there is much more information than the traditional measure takes account of. In particular, as well as knowing the label of liberal or conservative that cases receive, we also know the size and composition of the majority in every case. As such, alternative and arguably superior measures of judicial ideology can be developed, by taking into account the size and composition of the winning coalition, as the three models above do.

Despite the differences of the three models of judicial decision-making developed above, all three are in some ways superior to the traditional model, since they all take into account the significance of the differences among different liberal outcomes, and among conservative outcomes. Unlike the traditional form of measurement, these measures 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, but is more liberal than a case that receives unanimous approval. This ensures that a Court that decides a high percentage of unanimous cases in a liberal direction because of an extremely conservative status quo is not incorrectly coded as being overwhelmingly liberal. 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.

To develop empirically useful measures of judicial ideology from our three models, we must create operationalizations of them. Finding an exact operationalization for the unconstrained model, is extremely easy. That model consistently predicts that the

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[3] (updated annually), (Ann Arbor, MI: Inter-University Consortium for Political and Social Research, 1997), published as study #9422.

outcome will be at the exact location of the court median. The operationalization for the UIC measure is:

$$M_x = J_5 \text{ for all } SQ_x \in SQ \hspace{4cm} 1$$

The normatively constrained collegiate model mimics a "last in" model, when the status quo lies within the spectrum of the ideological makeup of the court. Then, the predicted outcome of the case is the ideal point of the most liberal justice to join the coalition when the coalition is conservative-skewed, and the most conservative justice to join a coalition when the coalition is liberal-skewed. When status quos lie outside the ideological spectrum of the court, the opposing outliers gain influence, drawing the outcome back towards the median.

To operationalize the normatively constrained collegiate model, we define $J_1(SQ_x)$ as the position to the right of J_1 that makes J_1 in different between that outcome and the status quo, and $J_9(SQ_x)$ as the equivalent for J_9. The operationalization for the NCC measure is:

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

$$\text{where } J_k = J_i \text{ s.t. } J_k - M_x < J_{i \neq k} - M_x \text{ for all } J_i \text{ where } J_i - SQ_x > J_i - M_x$$

$$= J_1(SQ_x), \text{ if } SQ_x < J_1$$

$$= J_9(SQ_x), \text{ when } SQ_x > J_9$$

What this means is that 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 becomes, once it is more extreme than the court's collective preferences.

The normatively constrained ideologue model largely tracks the indifference point of the median justice 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 median.

To operationalize the normatively constrained ideologue model,

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

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

$$= J_7 - J_3 + SQ \text{ if } J_7 > J_5(SQ)$$

$$= J_6, \text{ if } SQ > J_1(J_3),$$

$$\text{and } J_1(J_3) - J6 + SQ \text{ if } J_1(J_3) > J_5, \text{ and } J_5 \text{ otherwise.}$$

The reverse holds for conservative status quos:

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

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

$$= J_3 + J_7 - SQ, \text{ if } J_5(SQ) < J_3$$

$$= J_4, \text{ if } SQ < J_9(J_7),$$

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

Clearly, the operationalization of the NCI model is far more complicated than the other two models. Unlike the other two models, which have simple, easily intuitively grasped results, the NCI 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 immediately useful as an empirical measure, arguably it is its complexity that allows this model to better capture reality than the other two models and so it is nevertheless a better measure than the other two measures.

The NCI model nevertheless lends itself to a general, if inexact, characterization. Essentially, the NCI model captures the negotiations among the majority justices, while accounting for the danger of defection by the moderate justices. As such, it resembles a proxy measure proposed and analyzed elsewhere: the mean of the majority coalition (see Jacobi and Baird, 2006).

Table 2: NCI Model Compared With A Proxy Measure

Status Quo	Proximate Justice Predicted	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	$(J_7 - J_6)/2$
$(J_3 - J_2)/2 :$ $(J_2 - J_1)/2$	J_6	$(J_7 - J_6)/2$
$(J_2 - J_1)/2 :$ $(2.J_1 - J_2)$	J_6	J_6

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$(2.J_1 - J_2)$: $(2.J_1 - J_3)$	J_6	J_6
$(2.J_1 - J_3)$: $(2.J_1 - J_4)$	J_6	$(J_6 - J_5)/2$
$(2.J_1 - J_4)$: $(2.J_1 - J_5)$	J_5	$(J_6 - J_5)/2$
$(2.J_1 - J_5)$: $(2.J_1 - J_6)$	J_5	J_5

As Table 2 shows, on a uniformly distributed ideological spectrum, the difference between the NCI predictions and the mean of the majority coalition proxy measure is at most the standardized interval between two justices. Thus for use in empirical work, while the NCI model cannot be perfectly captured, the theory does nevertheless produce a plausible measure for empirical use. Despite lacking perfect precision in capturing the model, given the inherent weaknesses of the traditional measure, I propose that the NCI measure would be a considerable improvement on the traditional approach.

III. Applying the Models to the Rehnquist Court

This section illustrates the different predictions of the three models by applying them to the Rehnquist Court. To undertake this analysis, we need a valid estimate of the justices' ideological points. Martin and Quinn (2002) developed a measure of ideal points of Supreme Court justices, which are based on a rank ordering of justices and the standard is constant, 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 Martin and Quinn (2002) find they do. For example, they note that Brennan becomes more liberal over time, as do Souter and Blackmun (ibid).

Martin and Quinn take advantage of voting coalitions to make inferences about the relative placement of justices. A justice who is very often a lone dissenter in conservative cases will be ranked as more liberal than a colleague who sometimes joins him or her in 7:2 conservative decisions. If the colleague is rarely the lone dissenter in conservative cases, then he or she will be designated as a little more conservative. A moderate justice can change places with another moderate justice by increasing the number of conservative or liberal votes as compared with that other justice.

Furthermore, this measure provides standardized comparisons over time. Thus, even though Breyer was never on the Court with Brennan, Breyer's scores can be compared to Brennan because Brennan was on the Court with other justices who were on the Court with Brennan, such as Scalia, Rehnquist and Stevens. Therefore, the rank order measure simultaneously accounts for change over time and across justices for all years and therefore renders the ideal points of the justices a standardized comparison of justices with one another over time. In Table 3, we see that on the Rehnquist Court, O'Connor and Kennedy are in the middle of the coalition, but their scores show them to be historically more conservative than the average Supreme Court justice, which probably accounts for the general sense that the Court is more conservative in the 1990s than at other times. Not surprisingly, we find Scalia, Rehnquist and Thomas on the conservative end of the spectrum, Stevens and Ginsburg at the liberal end.

Applying Martin and Quinn's model to the three models, the general results of the three models can be specifically assessed. Justice O'Connor, as the median justice, whose ideological position is on average 0.79, will garner a 9:0 majority at her exact ideal point and a 5:4 majority for any status quo to the left of her ideal point, up until the midpoint

between herself and Justice Breyer = -1.135 (since Breyer is positioned at -1.04); and any status quo to her right, up until the midpoint between herself and Justice Kennedy = 0.87 (as Kennedy is positioned at 0.95). The ranges for in each of the Rehnquist Court justices are presented in Table 3.

Table 3: The Ideological Range of Influence for Each Justice of the Rehnquist Court

Justice	Ideal Point	Range Left	Range Right
Stevens	-3.19	-3.93	-2.46
Ginsburg	-1.72	-2.46	-1.48
Souter	-1.23	-1.48	-1.14
Breyer	-1.04	-1.14	-0.13
O'Connor	0.79	-0.14	0.87
Kennedy	0.95	0.87	1.38
Rehnquist	1.81	1.38	2.76
Scalia	3.70	2.76	3.74
Thomas	3.77	3.74	3.81

Table 3 presents the equilibrium positions and size of majorities for a continuum of status quos under the Rehnquist Court. Figure 2 considers these results for the full spectrum of possible status quos that give rise to different coalitions and outcomes. This covers double the ideological spectrum of the nine justices, ranging from the distance to Stevens' left equal to his distance from O'Connor to his right, through the full judicial spectrum, and to the point to Thomas' right that mirrors O'Connor's position to his left. Anything further to the extreme left or right produces no change.

Figure 2: Equilibrium Outcomes for the 3 Models for the Rehnquist Court
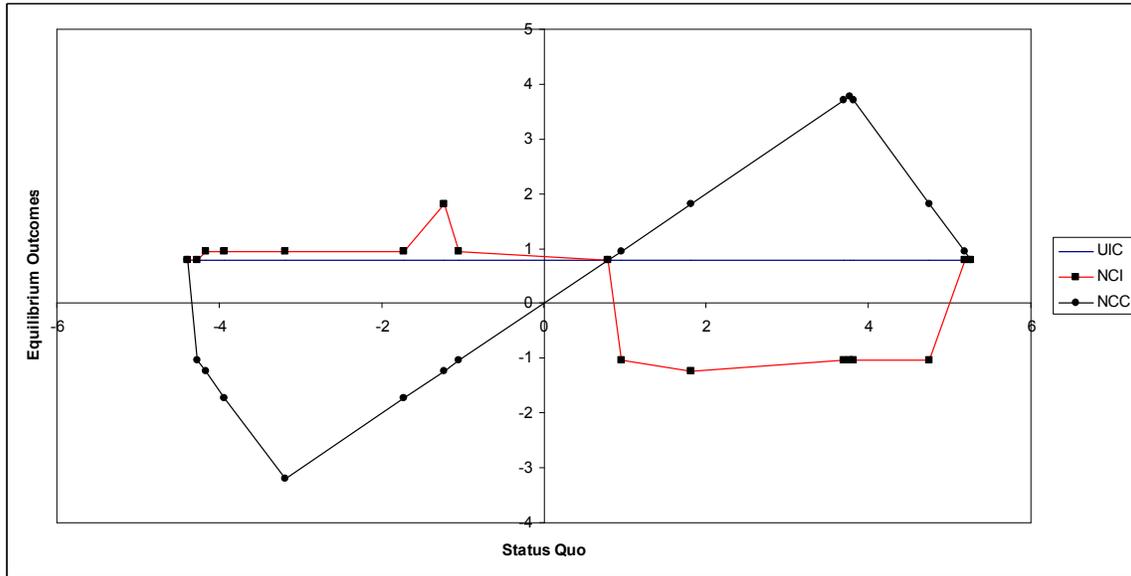
As in Table 1, the data in Figure 2 displays the "cutpoint outcomes," which has the effect of smoothing out the discontinuity in the collegial model. This is done purely for simplicity: the discontinuity is still in effect.

Figure 2 is interesting, particularly for its difference from Figure 1 in relation to the NCI model, and its similarity for the other two models. The UIC model is only different in the placement of its horizontal line at 0.79, the position of Justice O'Connor. This illustrates the relative historical conservatism of the Rehnquist court median. Other than the smoothing, the NCC model in Figure 2 is essentially similar to its incarnation in Figure 1: the movement of the outcome in lock step with the cumulative expansion of the coalition renders it fairly unchanging. In contrast, the NCI model is much more sensitive to changes in the court composition.

When status quos are moderately conservative, under the NCI model the ideological proximity between Souter and Breyer flattens out the range of equilibrium outcomes on the majority 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 model, with the exception of the single peak resulting from the influence of Rehnquist. The NCI model then, suggests outcomes will cluster at three points: the median, Souter/Breyer's ideal points, and some liberal status quos will result in outcomes that most closely reflect Rehnquist's preferences.

Applied in this way to specific Supreme Court eras, these models raise empirically testable hypotheses: the UIC model predicts that for the decade that the Court was stable, we will see outcomes consistently at O'Connor's preferences. The NCC model predicts that we will see the full range of the Supreme Court justices' preferences reflected. And finally, the NCI model predicts that we will see outcomes clustering at the three points described above: at the ideal points of O'Connor, Souter and Breyer, and somewhat less so Rehnquist.

IV. Conclusions

This Article has worked from "first principles" of how justices may balance competing desires to have case outcomes reflect their ideological preferences with their assumed preference for a larger coalition, as well as how to balance these preferences with the constraints of judicial norms, to produce three models of judicial coalition formation and outcome determination. An impressionistic assessment of the models' results shows that the unconstrained ideological model and the strongly collegiate model have flaws: one cannot explain variation in case outcomes, the other has discontinuous and arguably anti-intuitive results.

It is possible that the unconstrained ideological model is accurate, and the variation we see is a result of something outside the model, such as the power of the

opinion writer. But this explanation implicitly relies on certain assumptions: 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. This implicitly suggests that no purely ideological model is correct, as instead of weighing collegiality, under this explanation justices bow to the norm of opinion writing assignment. In fact, opinion writing assignment is a norm that anecdotal evidence shows will be disregarded when the resulting opinion strays too far from the majority's preferences: according to Justice Douglas' account, on another occasion when Chief Justice Burger attempted to subvert the majority by assigning the case to himself, he eventually had to transform his own opinion, and the majority will prevailed (Epstein and Knight, 1999).

Other than the discontinuity in the results of the collegiate model, that model also seems inferior to the constrained ideological model, as we should predict that more extreme status quos would increase rather than decrease the majority's power to ensure that its preferences are expressed in the opinion.

As well as providing three models of judicial coalition formation in case determination, this Article also proposed three associated measures of the ideological placement of the Supreme Court's policy outputs. Here, the constrained ideological measure is most problematic, simply because it cannot be expressed as simply as the other two measures. However, parsimony is not everything: the complexity of this measure is essential to its attractiveness as a descriptive mechanism.

Despite their flaws, all three measures proposed here possess an important advantage over the traditional measure, the percentage of liberal decisions. All three models have the advantage that they differentiate very liberal (conservative) outcomes

from moderately liberal (conservative) outcomes. This is an essential distinction if empirical studies are to have any precision. We now have three alternative measures of judicial ideology, which each stem from a rigorous theory of judicial choice in coalition formation and outcome determination, and each produce testable hypotheses for assessing the relative merits of the measures.

References

Bailey, Michael and Kelly H. Chang. Comparing Presidents, Senators, and Publications Justices: Inter-institutional Preference Estimation. *Journal of Law, Economics and Organization* 17, 2 (October 2001): 477-506.

Baird, Vanessa and Tonja Jacobi. 2006. "How the Dissent Becomes the Majority: Using Federalism to Transform Coalitions in the U.S. Supreme Court." Unpublished manuscript.

Cross, Frank B. Decision-Making in the U.S. Courts of Appeals. Forthcoming, 2006.

Edwards, Harry. Collegiality and Decision-Making on the D. C. Circuit. 1998. 84 *Virginia Law Review*: 1335

Epstein, Lee and Gary King. 2002. "Empirical Research and the Goals of Legal Scholarship: The Rules of Inference." *University of Chicago Law Review* 69: 1-133

Epstein, Lee and Jack Knight. 1998. The Choices Justices Make. Washington, DC: CQ Press.

Giles, Michael W., Virginia A. Hettinger and Todd C. Peppers (2001) ''Picking Federal Justices: A Note on Policy and Partisan Selection Agendas,'' 54 *Political Research Quarterly* 623–41

Howard, J. Woodford. 1981. *Courts of Appeal in the Federal Judicial System: A Study of the Second, Fifth, and District of Columbia Circuits. Princeton*, N.J.: Princeton University Press.

Jacobi, Tonja and Vanessa Baird. 2006. "A New Measure of Judicial Ideology and Coalition." Unpublished manuscript.

Martin, Andrew D., and Kevin M. Quinn. 2002. "Dynamic Ideal Point Estimation via Markov Chain Monte Carlo for the U.S. Supreme Court, 1953-1999." Political Analysis 10: 134-53.

McGuire, Kevin T., and James A. Stimson. 2004. The Least Dangerous Branch
Revisited: New Evidence on Supreme Court Responsiveness to Public
Preferences, Journal of Politics 66 (November): 1018-1035.

McGuire, Kevin and George Vanberg. Mapping the Policies of the U.S. Supreme Court:
Data, Opinions, and Constitutional Law. Paper presented at the American
Political Science Association, Washington DC., September 1-5, 2005.

Segal, Jeffrey A. and Albert D. Cover. 1989. "Ideological Values and the Votes of U.S.
Supreme Court Justices." American Political Science Review 83: 557-65

Segal, Jeffrey A. and Harold J. Spaeth: The Supreme Court and the Attitudinal Model.
New York: Cambridge University Press, 1993

Zorn, Christopher and Gregory A. Caldera, "Bias and Heterogeneity in a Media Based
Measure of Supreme Court Preferences" (February 15, 2003).