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Source: *American Journal of Political Science*, APRIL 2016, Vol. 60, No. 2 (APRIL 2016),  
pp. 490-508

Published by: Midwest Political Science Association

Stable URL: <https://www.jstor.org/stable/24877634>

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# Signaling and Counter-Signaling in the Judicial Hierarchy: An Empirical Analysis of *En Banc* Review

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*We leverage the institutional features of American courts to evaluate the importance of whistleblowers in hierarchical oversight. Drawing on a formal theory of signaling in the judicial hierarchy, we examine the role of whistleblowing dissents in triggering en banc review of three-judge panels by full circuits of the Courts of Appeals. The theory generates predictions about how dissent interacts with judicial preferences to influence circuits' review and reversal decisions, which we test using original and existing data. First, we show that judges who dissent counter to their preferences are more likely to see their dissents lead to review and reversal. Second, we show that dissents are most influential when the likelihood of non-compliance by a three-judge panel is highest. Our results underscore the importance of dissent in the judicial hierarchy and illustrate how judicial whistleblowers can help appellate courts target the most important cases for review.*

## Introduction

When responsibility is delegated in a hierarchical organization, an agent has the opportunity to take actions that a superior might dislike. In large hierarchies, this can be a problem: subordinates take so many actions that it is simply not feasible for a principal to review most of them. One way to mitigate this difficulty is to promote the use of whistleblowers. A wide-ranging theoretical literature has documented how whistleblowers can inform superiors of possible non-compliance or mismanagement by an agent (see, e.g., McCubbins and Schwartz 1984; Lupia and McCubbins 1994; Epstein and O'Halloran 1995; Austen-Smith and Feddersen 2008; Ting 2008; Gailmard and Patty 2013). But empirical tests of such theories are few—in part, because in many contexts it is difficult to identify the regular interactions of principals, agents, and whistleblowers. As a result, we know little about how whistleblowers can systematically assist principals in their oversight of agents.

In this article, we leverage the institutional features of the federal judicial hierarchy to evaluate this question. We examine the hierarchical relationship that exists within the U.S. Courts of Appeals. Cases in these courts are heard by panels of three judges, who are randomly chosen among the judges of a given circuit. A judge who disagrees with the decision of her colleagues may publicly signal her disagreement with a written dissent. Following a panel's decision, a majority of active judges on a circuit can vote to rehear a case *en banc*, thereby engaging in *discretionary* review. However, such reviews are both rare and costly, and occur in only about 1% of cases. Thus, the Courts of Appeals' need for high quality information when deciding which cases to review provides the opportunity for lower court judges to act as *whistleblowers* through their strategic use of dissent. We examine how such *whistleblowing dissents* affect the likelihood that a full circuit will *review* a panel's decision, and conditional on review, whether the circuit will *reverse* a panel's decision.

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We thank Tom Clark and Stefanie Lindquist for generously sharing data with us. We thank Alex Acs, Chuck Cameron, Tom Clark, Paul Collins, Greg Huber, Lewis Kornhauser, Chris Zorn, and seminar participants at Yale, Penn State, Washington University, and Ohio State University for helpful comments and suggestions. Data and replication code for this article can be found at the *AJPS* Data Archive on Dataverse, at doi:10.7910/DVN/29495.

*American Journal of Political Science*, Vol. 60, No. 2, April 2016, Pp. 490–508

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DOI: 10.1111/ajps.12193

Research on discretionary case selection by both the Supreme Court and the Courts of Appeals has demonstrated that cases with dissent are much more likely to be reviewed than cases without. However, the possibility that the influence of dissent varies across particular *types* of dissents—in terms of both the signal they send to a higher court and the type of judge sending such a signal—has received less attention. To generate precise theoretical predictions about the relationship between judicial whistleblowers, dissents, and *en banc* review, we use the formal theory developed in Beim, Hirsch, and Kastellec (2014), which examines how both the possibility and actuality of dissent influence interactions between the members of a lower court and a higher court with a discretionary docket. For ease of presentation, we call this the “whistleblower theory.”<sup>1</sup> While the whistleblower theory is general, it nicely captures the dynamics of a full circuit deciding whether to review a three-judge panel’s decision. In particular, the theory offers several predictions about how the presence or absence of a dissent will interact with preferences in the hierarchy to influence the decision to both review and reverse a panel’s decision. These predictions are new to both the literatures on *en banc* review and on the judicial hierarchy more generally.

We test these predictions using a combination of existing and original data on Courts of Appeals cases decided from 1986 to 2002. This data includes the universe of three-judge panel decisions in which a full circuit voted to rehear that decision *en banc*, plus a random sample of cases not reheard. We use measures of judicial ideology to define a whistleblower on a panel, who may or may not dissent. This allows us to distinguish between dissents that the theory identifies as intended to signal non-compliance, which we term *whistleblowing dissents*, and other types of dissent.

We first examine how the preferences of whistleblowers affect the probability of review. The whistleblower theory predicts that whistleblowers who are ideologically *closer* to the panel majority—i.e., “allies” of the majority—are more credible messengers about severe non-compliance by that majority. Conversely, according to the theory, whistleblowers who are ideologically distant from the panel majority are less credible because they are too willing to dissent when they disagree with the panel majority’s decision, even in cases in which

non-compliance is less severe. We call this combination of preferences and dissenting behavior *counter-preference signaling*—sending signals that run counter to one’s preferences. We find that counter-preference signals are an important predictor of *en banc* review: moving from a whistleblowing dissent written by a judge whose ideology is very distant from the panel majority to one who is very close raises the probability of *en banc* review from 3% to 17%.

We next examine how the effect of a whistleblowing dissent on review is mediated by the degree of preference divergence between the panel and the full circuit that oversees it. The whistleblower theory predicts that whistleblowing dissents should be most effective at triggering review when the panel and full circuit are ideologically distant. The reason for this effect is intuitive: *ceteris paribus*, dissent is a stronger signal of severe non-compliance when the potential for non-compliance is greater. We find that this distance is also an important mediator of the effect of dissent on *en banc* review: the marginal effect of a whistleblowing dissent is about 46 percentage points when panels and full circuits are distant, compared to about three percentage points when they are close. Both this and the effect of counter-preference signals are quite striking, given the overall rarity of *en banc* review.

Finally, the whistleblower theory generates several predictions about the likelihood that the full circuit *reverses* a decision by a three-judge panel, conditional on review. First, the theory predicts that in unanimous cases, the likelihood of reversal decreases both as a panel and the potential whistleblower move toward the full circuit. We find strong evidence for the former and weak evidence for the latter. The effect of panel-circuit distance is sizable: a reviewed unanimous decision by a panel most distant from the full circuit is 30 percentage points more likely to be reversed than one by a panel closest to the full circuit. Second, the whistleblower theory predicts, and the data show, that reviewed cases with whistleblowing dissents are more likely to be reversed than reviewed unanimous decisions. Taken together, these results have important implications for assessing the role of whistleblowers in the judicial hierarchy, and suggest ways forward for understanding whistleblowing more broadly in other institutional contexts.

## Whistleblowing, Dissents, and Discretionary Review

The relationship between dissent and discretionary review in the judicial hierarchy has a long lineage in judicial

<sup>1</sup>Whistleblower theory applied to the judicial hierarchy originated with Cross and Tiller (1998), and has been extended in several theoretical and empirical applications (see, e.g., Sunstein et al. 2006; Kastellec 2007; Kim 2008; Beim and Kastellec 2014, *inter alia*). The specific theory of whistleblowing in Beim, Hirsch, and Kastellec (2014) that we apply should be distinguished from this more general line of inquiry.

politics (see, e.g., Tanenhaus et al. 1963; Perry 1991). Why are non-unanimous cases more likely to be reviewed by higher courts? For one, dissents may indicate that a case is more controversial, important, or difficult. A dissent may also explicitly indicate that the majority made a decision contrary to precedent or a higher court's preferences.

In evaluating the informational role of dissent at different levels of the judiciary, it is useful to distinguish between the core functions of the *en banc* process and the Supreme Court's *certiorari* process. Whereas the Supreme Court does not usually engage in error correction (focusing almost solely on law creation and rule modification), the *en banc* process is designed to function in large part as an error-correction institution, in which errors may be understood as either technical mistakes, or failures to comply with the preferences of higher courts (George 1999). Thus, *en banc* review is more likely to focus on weeding out non-compliance by three-judge panels than the *certiorari* process (Oliphant 1991; Note 1989; Banks 1999).

Formally, *en banc* review allows the full circuit to rehear a case after a three-judge panel has decided it. Litigants may petition for *en banc* review; any judge on the circuit—including both those on the three-judge panel and those not on the panel—may also suggest to his colleagues that they review a decision *en banc*. The active judges on the circuit then vote, by majority rule, on whether to take the case. Since whistleblowing is fundamentally about exposing non-compliance, dissents that serve a whistleblowing function are more likely to be influential in *en banc* review, compared to Supreme Court review. Indeed, the weight of evidence suggests that judges on the Courts of Appeals strategically use dissents—in certain situations—to signal to full circuits that a panel majority's decision is worthy of review.<sup>2</sup> Moreover, Kim (2008) and Kstellec (2011) find that the voting behavior of panels of the Courts of Appeals is conditioned by the panel's relationship to the full circuit.

Accordingly, when thinking about the relationship between dissents and discretionary review, we can place dissents into two broad categories. We can think of one category of dissents as “whistleblowing dissents” that are intended by a judge to signal non-compliance to a higher court (Cross and Tiller 1998). “Non-whistleblowing dissents” are all other types of dissents, including “expressive” dissents in which a judge's goal is solely to voice disagreement with a decision by a panel majority. (We

elaborate more on this distinction below.) Most studies of *en banc* review, however, have pooled all dissents together (see, e.g., George 1999; Clark 2009). While these studies have convincingly shown a substantial additive effect of dissent on *en banc* review, they do not allow this effect to differ across judges (or dispositions).

Two exceptions are noteworthy. First, Giles, Walker, and Zorn (2006) find that while dissents increase the probability of *en banc* review, there is no additional effect of dissent in cases decided against the preferences of a circuit majority. Beim and Kstellec (2014), however, find that more conservative circuits are more likely to review liberal decisions with dissent than conservative decisions with dissent, while liberal circuits are more likely to review conservative decisions with dissent than liberal decisions with dissent. However, while both of these studies allow the effect of dissents to differ across *dispositions* (or case outcomes), neither allows the effect to differ across *the ideology of the dissenting judge*.

In addition, among the many studies of discretionary review (including both *en banc* and *certiorari* on the Supreme Court), there has been little research connecting the review decision with the decision whether to reverse. This is surprising because the theoretical models explaining case selection necessarily have implications for the likelihood of reversal, conditional on review.<sup>3</sup> For example, the seminal formal theory of *certiorari* developed in Cameron, Segal, and Songer (2000) predicts which cases should be reversed, yet only the model's predictions with respect to review are tested.

## Counter-preference Signals and Dissents

In developing predictions about which types of whistleblowers might be most likely to trigger *en banc* review, this article relates to a large literature showing how biased information may be more useful than unbiased information (Calvert 1985). Given preference divergence between two actors in a signaling framework, a signal that is biased *against* a sender's preferences will have more credibility than one that is biased toward them. Thus, in some instances, actors who must infer the meaning of signals under conditions of imperfect information may prefer to have biased senders. For exposition, we call signals sent by biased actors “counter-preference signals”—those that run counter to one's preferences.

<sup>2</sup>In a recent and comprehensive study, Blackstone and Collins, Jr. (2014) reach this conclusion, supporting similar findings by Van Winkle (1997) and Kim (2008). These articles stand against the findings of Hettinger, Lindquist, and Martinek (2004, 2006), who found no evidence of strategic dissents.

<sup>3</sup>Carrubba and Clark (2012) and Hall (2009) both study how the distance between lower courts and the Supreme Court conditions the likelihood of review and reversal. These articles, however, treat dissent simply as a control variable.



The logic of this argument is nicely illustrated in a recent study of the influence of newspaper endorsements by Chiang and Knight (2011). They find that the interaction between the predisposition of a newspaper and the ideological direction of an endorsement determines how strongly that endorsement will influence vote choice among readers. If a left-leaning paper endorses a Republican candidate, Democratic voters are more likely to vote for that candidate, and vice versa.

Similarly, the value of biased information has been demonstrated in research on discretionary review in the judicial hierarchy. In the formal theory presented in Cameron, Segal, and Songer (2000), a higher court that is uncertain about the compliance of a lower court can infer that the lower court complied if the decision is biased against the lower court, given the relative preferences of the two courts. Cameron et al. call this the *Nixon goes to China* result—"if a cold warrior like Nixon goes to China it must be time for a change in American policy." The logic of this result has been extended to the study of *en banc* review by Giles, Walker, and Zorn (2006) and Clark (2009). Both articles find that full circuits are most likely to review decisions by ideologically distant panels that likely do not conform with the preferences of the full circuit—that is, decisions that do *not* run counter to the relative preference of the three-judge panel. No study, however, has examined how counter-preference signals from *dissenters* (or potential dissenters) may also provide information to a full circuit deciding whether to review a case. Are certain dissenters more credible messengers of non-compliance than others? If so, why?

## Theory and Hypotheses

To generate theoretical predictions about signals and counter-preference signals in the judicial hierarchy, we use the whistleblower theory developed in Beim, Hirsch, and Kastellec (2014). The theory models dissent as motivated by the desire of a lower court judge to *blow the whistle* on her colleagues about non-compliance with a higher court's preferences in order to trigger review and reversal. Other plausible motives for dissent are outside the model, although we account for some of these in the empirical analysis.

In the theory, a lower court hears a case in the shadow of potential review and reversal by a higher court. The judge whose preferences are most aligned with the higher court can be thought of as a *potential whistleblower*, in that she can choose to report non-compliance by her colleagues through a whistleblowing

dissent, which can potentially trigger a review and reversal. Alternatively, she can choose not to dissent, creating a unanimous decision. For ease of presentation, we henceforth refer to the potential whistleblower as simply the *whistleblower*, with the understanding that this label describes her potential to act as a whistleblower, but not always her actual behavior. This distinction is important because both the presence and absence of a dissent by the whistleblower are informative to the higher court.

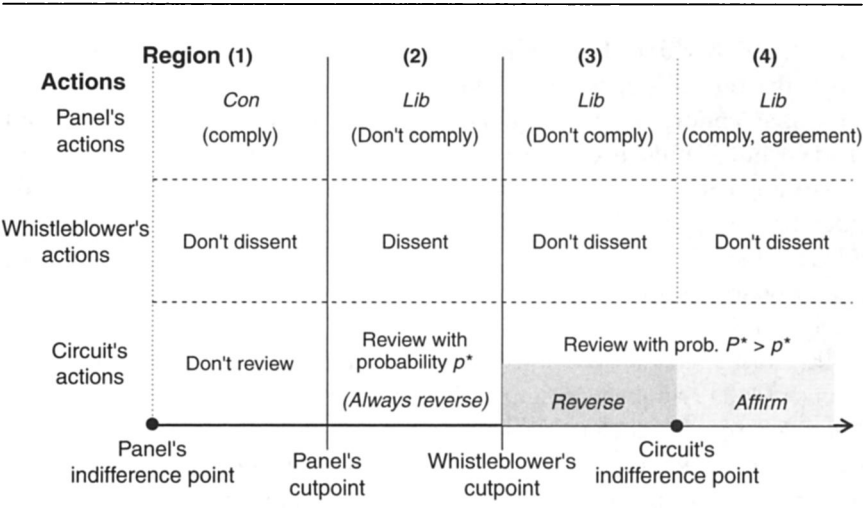
In our empirical application, we treat the median of the three-judge panel as the lower court majority, and the median of the full circuit as the higher court. Accordingly, we refer to the lower court as the panel (or panel majority), and the higher court as the full circuit (or simply circuit) from this point forward.

In the theory, cases exist on a continuum according to the facts of the case (e.g., the intensity of a search in a Fourth Amendment case). For a given case, the panel makes a binary decision that the case should receive the "liberal" or "conservative" outcome. Initially, these case facts are known only to the panel judges, but the full circuit can make inferences about them based on the panel judges' actions. After making these inferences, the circuit can then choose to review the panel's decision (at some cost), at which point it learns the true facts of the case, and can reverse or affirm the decision. If the circuit reverses the panel, then the judges in the panel majority suffer a sanctioning cost.

Each judge's preferences over dispositions given a set of case facts are modeled as an *indifference point*, which can fall anywhere on the continuum of case facts. A judge prefers that cases to the right of his indifference point be decided liberally, and cases to the left of his indifference point be decided conservatively. Importantly, judges care more about the disposition of some cases than others; the further a case falls from a judge's indifference point, the more intensely he cares about getting the "correct" outcome. Thus, the circuit will care more about "severe" non-compliance—the panel ruling liberally in cases that are far to the left of the circuit's indifference point—than less-severe non-compliance.

Figure 1 depicts preferences and actions in the theory when the panel is more liberal than the circuit (we maintain this assumption throughout the presentation of the theory, although our empirical analysis accounts for all possible configurations of judges). The indifference points of the panel and the circuit are depicted with solid circles (we discuss the location of the whistleblower below). Given these preferences, there exists a "conflict region" between the panel and the full circuit. In cases in

FIGURE 1 Summary of Theory



See text for details.

this region, the panel prefers to rule liberally, but the circuit would instead prefer a conservative ruling. The panel must decide whether or not to issue a non-compliant liberal ruling in the shadow of a potential threat by the whistleblower to dissent, and the review and reversal that dissent may trigger.

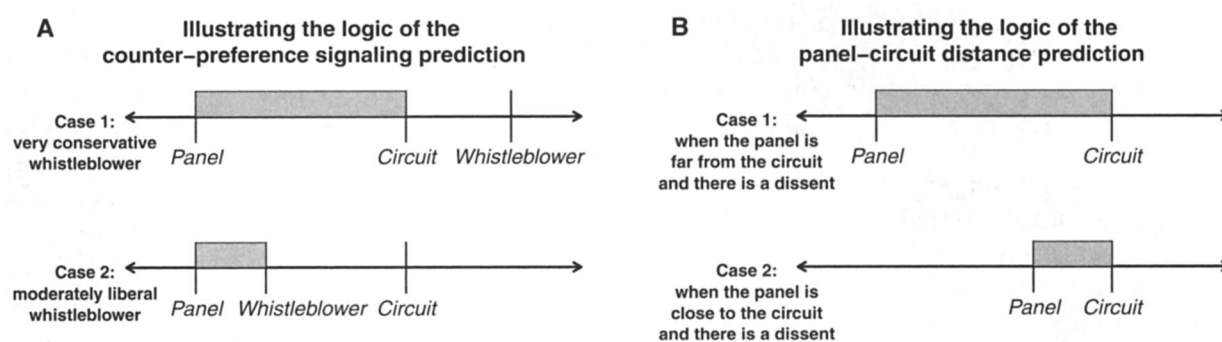
In the equilibrium of the model, the behavior of the panel majority is governed by a *cutpoint*, depicted with a solid vertical line in in Figure 1. It chooses the conservative ruling when the case facts fall below this cutpoint (Region 1), and chooses the liberal ruling when the case facts fall above it (Regions 2–4). In the theory, the full circuit always agrees with the disposition when the panel rules conservatively because the panel is more liberal than the circuit. A conservative decision by the panel is thus a *perfect signal* of compliance, and we therefore label it as *non-suspicious*. In the theory, non-suspicious decisions are never reviewed, nor reversed. In addition, because the whistleblower in the theory is assumed to be *solely* motivated by her desire to trigger reversal, she also never makes a costly and fruitless dissent from such rulings.

In contrast, a liberal decision may or may not be compliant. Sometimes the case facts are in the conflict region, and the panel prefers the liberal disposition when the circuit does not (Regions 2–3). Other times, both courts prefer a liberal decision (Region 4). Since the circuit cannot observe case facts without reviewing, from its perspective compliant liberal rulings are *pooled* with non-compliant ones. We therefore term such rulings *suspicious*, because upon observing them the circuit is uncertain about whether non-compliance occurred.

This uncertainty presents an opportunity for the whistleblower to provide additional information through a dissent. Like the panel majority, the whistleblower’s behavior is governed by a cutpoint, which describes when she dissents from a suspicious liberal ruling by her colleagues. Figure 1 depicts the behavior of a whistleblower who is more conservative than the panel majority (the whistleblower can be either less or more conservative than the circuit). Such a whistleblower will pay the cost of dissent only if *both* non-compliance occurred (since there is no point in triggering a review of a compliant ruling), and the case facts are sufficiently far from her indifference point to make the chance of triggering reversal worthwhile (Region 2). Consequently, when the circuit observes a whistleblowing dissent, it is *certain* that non-compliance occurred, but *uncertain* about exactly how severe that non-compliance was. It will therefore only sometimes review the case (if it is worth the time), but always reverse upon review. Crucially for our empirical tests, how likely the circuit is to review after a whistleblowing dissent depends on the credibility of the judge issuing it. As we detail below, some whistleblowers will be more credible messengers of severe non-compliance than others, and therefore, be more effective at triggering review and reversal.

Finally, there are some non-compliant decisions in which the whistleblower disagrees with the panel majority, but does not find it worthwhile to dissent (Region 3). In such instances, the probability that the full circuit will review is lower compared to when there is a dissent—and the full circuit will only reverse if it discovers that non-compliance actually occurred.

FIGURE 2 Illustrating the Logic of the Review Predictions



See text for details.

### Counter-preference Signaling Predictions

Having summarized the model, we can now generate theoretical predictions about *en banc* review and reversal. In the model, the full circuit would only like to expend the cost of review on cases in which non-compliance is particularly severe, because its time is valuable. Imagine, at the extreme, that the whistleblower were to *always* dissent whenever the panel ruled against the preferences of the circuit. Then the circuit would have no way of discerning the severity of non-compliance across different cases—dissents would not be informative as to severity (though they still would be informative of non-compliance). Conversely, a whistleblower who only dissents from the most severe instances of non-compliance provides a much stronger signal that review is warranted. Thus, dissents signal severe non-compliance most convincingly, and are most effective at triggering review, when they are *rare*.

Which types of judges are likely to dissent the most, thereby diminishing the impact of their dissents? A whistleblower's incentive to dissent is driven by her desire to see decisions with which she disagrees overturned because this incentive comes mainly from her preferences over case outcomes. As a result, whistleblowers who are *farthest* ideologically from the panel majority (i.e., the panel median) will have the most incentive to dissent "too often," and will be least effective at triggering review. On the other hand, whistleblowers who are closer to the panel majority (i.e., those who have cutpoints more to the left) who nevertheless choose to dissent will be much more credible messengers of severe non-compliance.

To see the intuition for this effect, suppose that a *very conservative* judge dissents from a liberal ruling by a liberal panel, as depicted in Case 1 in Figure 2A. While the circuit can be sure that the panel median indeed made a non-compliant decision, the circuit does not know whether the non-compliance was egregious or minor. This is

because the conservative whistleblower has an incentive to dissent from a liberal decision whenever the case facts lie anywhere in the shaded interval, which covers the entire conflict region.<sup>4</sup> Thus, while the circuit can be sure upon observing a dissent that non-compliance occurred, it cannot know whether that non-compliance was egregious or minor.

In contrast, suppose the dissenting judge was instead *moderately liberal*, as depicted in Case 2 in Figure 2A. Being generally friendly to liberal dispositions, such a judge is only willing to dissent in the smaller shaded region, which contains only the most severe instances of non-compliance. Consequently, the moderate judge's dissent is a much stronger signal of severe non-compliance, and will be more effective at triggering review, compared to a dissent by a very conservative judge. Intuitively, *if even a moderately liberal judge dissents from a liberal ruling, a conservative circuit will likely want to review it*. We call such dissents "counter-preference signals."

The same intuition generates a less obvious prediction about unanimous cases—a whistleblower's *silence* can be as informative as her dissent. Consider a conservative circuit deciding whether to review a unanimous liberal decision. As the whistleblower moves away from the panel majority and toward the full circuit, the *absence* of dissent becomes a stronger signal that the circuit would agree with the liberal decision, which decreases the probability of review. Intuitively, *if even a conservative judge agrees with a liberal ruling, a conservative circuit will likely not want to review it*. As a result, the preferences of whistleblowers affect the likelihood of review, even when no whistle is observed. This leads to:

<sup>4</sup>To be clear, the model does not predict that such a whistleblower will always actually dissent from exactly these cases in equilibrium; just that she has an incentive to signal non-compliance in a wider range of cases.



- *The Counter-Preference Signaling Review Hypothesis:* The probability of review, both in suspicious decisions with whistleblowing dissents and in unanimous suspicious decisions, decreases as the whistleblower moves farther away from the panel majority.

Figure 3A depicts this argument graphically; it shows the theoretical predicted probabilities of review of cases both with and without dissent as a function of the whistleblower's location (relative to the panel majority). Both functions are highest when the whistleblower is an ideological doppelgänger of the panel majority, and then weakly decrease as the whistleblower moves in the direction of the circuit median.

Next, consider the full circuit's decision of whether to reverse a decision, conditional on having granted review. Figure 3C depicts the probability of reversal, conditional on review, in cases with and without dissent, as the location of the whistleblower varies. Because the whistleblower only dissents in instances of non-compliance (though possibly very minor ones), if the full circuit reviews a case with a dissent the model predicts that it will always reverse. Conversely, in unanimous cases the full circuit will sometimes discover upon review that the liberal disposition was actually compliant. As the whistleblower moves farther away from the panel, this scenario becomes more likely; thus, the probability of reversing a reviewed unanimous decision decreases. This leads to:

- *The Counter-Preference Signaling Reversal Hypothesis:* The probability of reversal in unanimous suspicious decisions, conditional on review, decreases as the whistleblower moves farther away from the panel majority.

### Dissent and the Distance between the Panel and the Circuit

While the location of the whistleblower is important for understanding discretionary review and reversal, the ideological distance between the full circuit and the panel majority is also crucial. Indeed, this principal-agent relationship has been the focus of most studies of interactions between higher and lower courts (Cameron, Segal, and Songer 2000; Clark 2009; Giles, Walker, and Zorn 2006). In our theory, a whistleblowing dissent is most effective in generating review when the panel majority is far from the full circuit (see Case 1 in Figure 2B—we do not depict the whistleblower because the key condition is the presence of a dissent). Under these conditions, the panel majority makes many liberal decisions, and the ones from which

the whistleblower dissents are more likely to be severely non-compliant relative to unanimous liberal decisions. Consequently, the circuit is much more likely to review decisions with dissents, and the *marginal effect* of dissent is large. In contrast, when the panel is near the circuit (see Case 2 in Figure 2B), the disagreement region is small. Most of the panel's decisions are compliant, and when they are not, the degree of non-compliance is minor. Consequently, the full circuit is less responsive to dissent. This leads to:

- *The Panel-Circuit Distance Review Hypothesis:* The marginal effect of whistleblowing dissents in suspicious decisions on the probability of review decreases as the panel majority moves closer to the full circuit.

The effect is illustrated in Figure 3B. The vertical axis again depicts the probability of review, while the horizontal axis depicts the location of the panel median, moving left-to-right from farther from the full circuit to closer to it. A similar logic also applies when considering the effect of the location of the panel median (relative to the full circuit) on the probability of reversal in unanimous cases, which leads to:

- *The Panel-Circuit Distance Reversal Hypothesis:* The probability that the circuit will reverse a unanimous suspicious decision, conditional on review, decreases as the panel majority moves closer to the full circuit.

### Review and Reversal in Unanimous versus Non-unanimous Cases

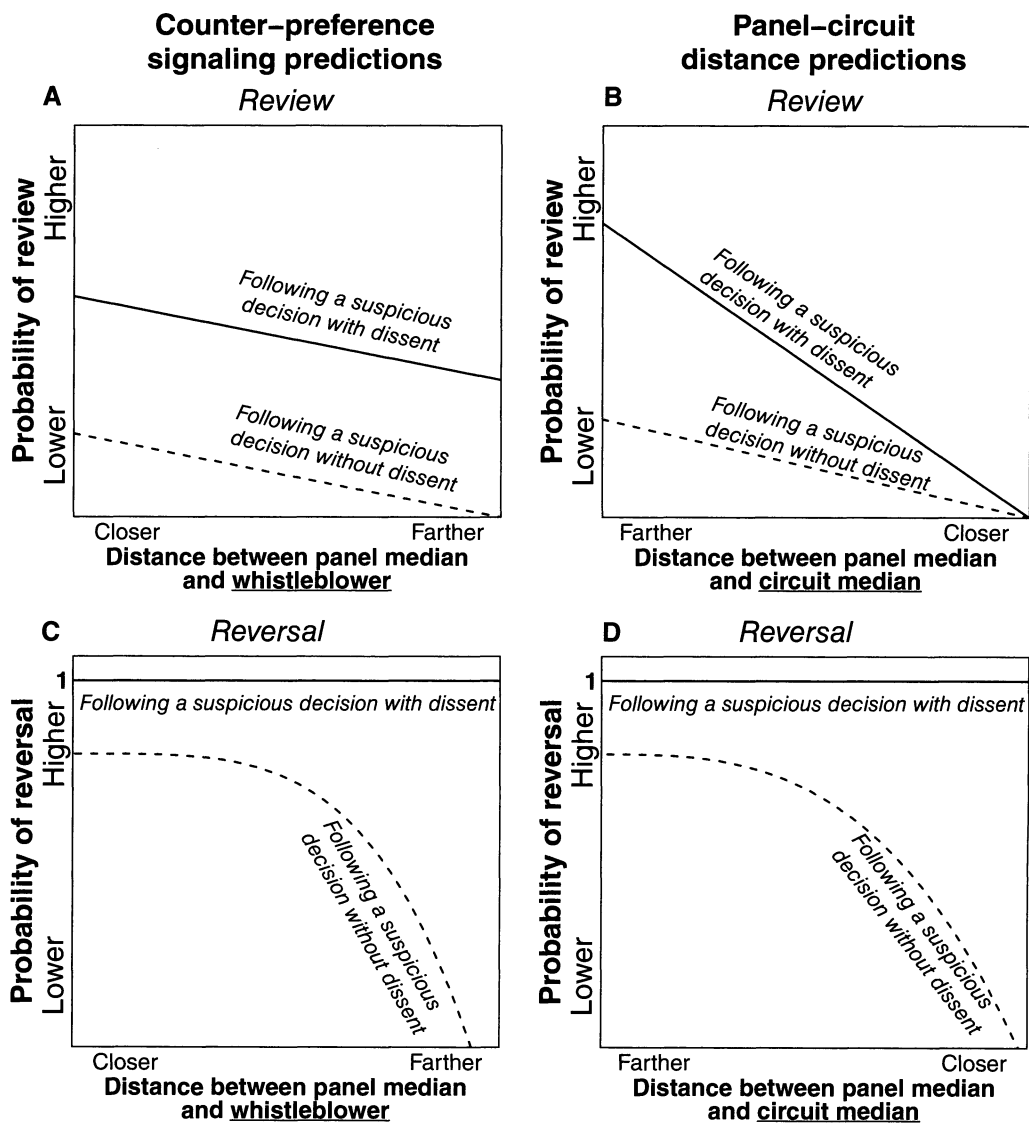
Finally, the theory makes predictions about the relative likelihood of both review and reversal of suspicious rulings with and without a dissent. Beginning first with the former, for any fixed distance between the panel median and the whistleblower, or between the panel and circuit medians, the probability of review following a dissent is always higher than the probability of review following a unanimous decision. This is because in the theory, dissent always signals more severe non-compliance, while unanimous (suspicious) decisions signal less severe non-compliance or compliance. This leads to:

- *The Dissent versus Unanimity Review Hypothesis:* For any given configuration of preferences, the probability of review is always higher in suspicious decisions with whistleblowing dissents than in unanimous suspicious decisions.

As noted above, when the full circuit reviews a case with a whistleblowing dissent, the theory predicts that



FIGURE 3 Graphical Presentation of the Review and Reversal Hypotheses



See text for details.

the probability of reversal is 1, since whistleblowers only dissent from non-compliant decisions. This prediction is surely too strong, given that both dissents and *en banc* review occur for reasons outside the model. But, as both Figures 3C and 3D show, the likelihood of reversal is always higher in cases with whistleblowing dissents than in unanimous cases. This leads to:

- *The Dissent versus Unanimity Reversal Hypothesis:* The probability of reversal, conditional on review, is always higher in suspicious decisions with whistleblowing dissents than in unanimous suspicious decisions.

Table 1 collects and summarizes all the hypotheses.

### Data and Analysis

**Data.** To test these predictions, we use both existing and original data on cases heard on the Courts of Appeals. Complete details of our data collection can be found in the Supplemental Appendix; we provide a brief summary here. Testing the theory requires a sample of cases with a sufficient number of *en banc* reviews to conduct meaningful statistical analysis. We follow the lead of other studies and employ a choice-based approach in which we oversample cases reheard *en banc* (Giles, Walker, and Zorn 2006; Clark 2009; Beim and Kastellec 2014). Specifically, our dataset includes a stratified random sample of Courts of Appeals cases decided between 1986 and 2002 that were

TABLE 1 Summary of Hypotheses

| Name   | Hypothesis   | Theoretical picture | Empirical picture |
|--|--|---------------------|-------------------|
| REVIEW   |  |                     |                   |
| The Counter-preference Signaling Review Hypothesis   | The probability of review, both in suspicious decisions with whistleblowing dissents and in unanimous suspicious decisions, decreases as the whistleblower moves farther away from the panel majority. | Figure 3A           | Figure 5A         |
| The Panel-circuit Distance Review Hypothesis         | The marginal effect of whistleblowing dissents in suspicious decisions on the probability of review decreases as the panel majority moves closer to the full circuit.                                  | Figure 3B           | Figure 5B         |
| The Dissent versus Unanimity Review Hypothesis       | For any given configuration of preferences, the probability of review is always higher in suspicious decisions with whistleblowing dissents than in unanimous suspicious decisions.                    | Figures 3A & 3B     | Figures 5A & 5B   |
| REVERSAL   |  |                     |                   |
| The Counter-preference Signaling Reversal Hypothesis | The probability of reversal in unanimous suspicious decisions, conditional on review, decreases as the whistleblower moves farther away from the panel majority.                                       | Figure 3C           | Figure 6A         |
| The Panel-circuit Distance Reversal Hypothesis       | The probability of reversal in unanimous suspicious decisions, conditional on review, decreases as the panel majority moves closer to the higher court.  | Figure 3D           | Figure 6B         |
| The Dissent versus Unanimity Reversal Hypothesis     | The probability of reversal, conditional on review, is always higher in suspicious decisions with whistleblowing dissents than in unanimous suspicious decisions.                                      | Figures 3C & 3D     | Figure 6 (entire) |

The last two columns depict where theoretical pictures (above) and empirical pictures (below) of each hypothesis can be found.

not reheard *en banc*, as well as the universe of three-judge panel decisions in this period that *were* reheard *en banc*.

After removing cases with missing observations, our dataset contains 5,589 panel decisions (distributed roughly evenly across all 12 circuits), 792 of which were granted *en banc* review. Note that combining a random sample with a universe of cases requires each observation to be weighted accordingly; the details of the weighting procedures are also described in the Supplemental Appendix. The overall rate of *en banc* review is about 1%, meaning only about 1 out of every 100 (published) Courts of Appeals decisions is reviewed *en banc*.

Of the 792 cases granted review, the full circuit reached their own decision in 772 cases (in the remaining cases, *en banc* review was terminated before the circuit

reached a decision). For these 772 cases, we coded whether the full circuit reversed the panel or not—see the Supplemental Appendix for details on how we coded reversals. Because this set of cases comprises the universe of *en banc* decisions in this period, we do not need to employ weights for the analysis of reversal decisions. To the best of our knowledge, this dataset comprises the largest number of *en banc* cases—both in terms of the review decision and the reversal decision—to be subject to a case-level analysis of review.<sup>5</sup>

<sup>5</sup>Giles et al. (2007) evaluate the universe of *en bancs* from 1942 to 1999 from a macro perspective, using the number of *en bancs* in a given circuit-year as their dependent variable.

**Dispositions and Preferences.** To code case dispositions, we rely on the coding protocol in Songer (1999) and code each panel decision as liberal or conservative. If the decision was accompanied by a dissent, we record which judge dissented. For judicial preferences, we rely on the approach of Giles, Hettinger, and Peppers (2001). The GHP scores, higher values of which indicate that a judge is more conservative, are based on the Common Space score of a judge's appointing president and/or home state senators.

Testing the theory requires estimates of the preferences of the full circuit, the panel, and the whistleblower. We define the full circuit's indifference point by using the GHP score of the median active judge on the circuit at the time a case was heard (we call this variable "circuit median"). Similarly, we define the panel majority as the *panel median*: the median GHP score of the three judges on the panel. To measure the preferences of the whistleblower, we use the following procedure. If the panel median is more *liberal* than the circuit median, define the whistleblower as the most *conservative* judge on the panel. If the panel median is more *conservative* than the circuit median, define the whistleblower as the most *liberal* judge on the panel. The whistleblower is thus the panel judge most ideologically biased against the disposition favored by the panel majority, relative to the full circuit. Importantly, this operationalization depends on the exogenous *preferences* of the relevant actors and their relative configuration, rather than the endogenous *votes* that they cast.<sup>6</sup> So, as in the theory, the judge we identify as the whistleblower may or may not actually dissent.

With these measures in hand, we can define the relevant distance measures in the theory. First, *Panel-circuit distance* is the absolute value of the distance between the panel median and the circuit median. Second, given our operationalization of the preferences of the whistleblower, *panel-whistleblower distance* is simply the absolute value of the distance between the panel and the whistleblower.<sup>7</sup>

### **Suspicious Decisions and Whistleblower Dissents.**

Next, the theory makes predictions about the circuit's review and reversal behavior as a function of whether the panel made a suspicious decision, and whether the

whistleblower dissented.<sup>8</sup> We define a *suspicious decision* as one in which the full circuit cannot be sure if the panel's decision is compliant. Specifically, define a decision as suspicious if either a panel that is more liberal than the circuit makes a liberal decision, or a panel that is more conservative than the circuit makes a conservative decision.<sup>9</sup> Next, we define a *whistleblower dissent* as a dissent by the judge who we have defined as the whistleblower.<sup>10</sup>

**Behavior Outside the Theory.** The theory solely models what we have called *whistleblowing dissents*—dissents by a whistleblower that are intended to signal non-compliance and trigger review and reversal. Accordingly, such dissents occur only from suspicious decisions. This scenario is depicted in Figure 4A. Let  $W$  denote the judge we identify as the whistleblower, and  $J_1$  and  $J_2$  the remaining two judges on the panel, with  $J_2$  being the median of the panel. In the example, all three judges are more liberal than the circuit.<sup>11</sup> In Figure 4A, the two most-liberal judges vote liberally, thereby creating a suspicious decision, from which  $W$  dissents.

In reality, however, judges dissent for many reasons, and connecting theory to data requires accounting for such behavior that is outside the theory yet present in the data. This includes dissents from non-suspicious decisions, which never occur in the theory (since a non-suspicious decision is a perfect signal of compliance). For example, in Figure 4B, the judge we identify as the whistleblower joins the median in deciding the case

<sup>8</sup>Other studies have noted that the relative position of the Supreme Court may condition the likelihood of review; e.g., a liberal circuit that is distant from a conservative Supreme Court may be less inclined to review a conservative panel decision, compared to a conservative circuit deciding whether to review a liberal panel decision (Clark 2009; Beim and Kestellec 2014). As was the case with these studies, a vast majority of the cases in our data (around 80%) were decided in Republican-controlled circuits (i.e., conservative circuits), making it difficult to get leverage on this question. (Clark [2009], e.g., does not find a statistically significant difference in the likelihood of review based on the position of the Supreme Court, likely because an even greater proportion of cases in the dataset he used were decided in Republican-controlled circuits.)

<sup>9</sup>This is analogous to what Giles, Walker, and Zorn (2006) call a "minority" decision (minority with respect to the circuit) and the converse of what Clark (2009) calls an "opposite" decision (opposite with respect to the panel's relative preferences).

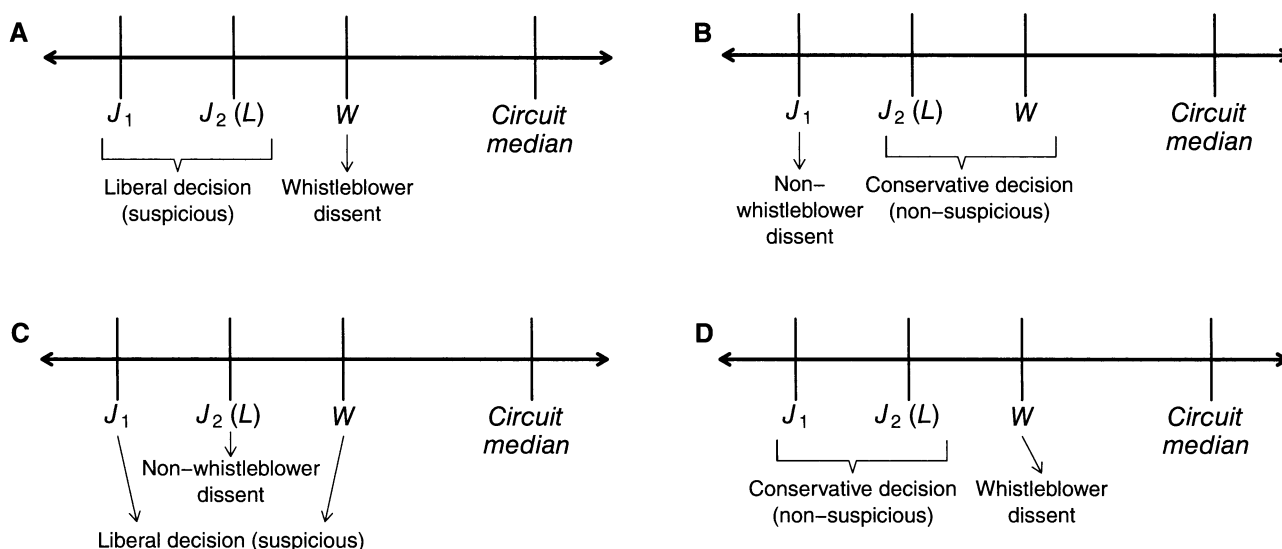
<sup>10</sup>In some cases, two judges will share the same GHP score, and thus, they will be jointly identified as the whistleblower. If either of these judges dissented, then we classify that dissent as a "whistleblower dissent." (These are the cases where the panel median's ideological doppelgänger dissented.)

<sup>11</sup>Recall that in our empirical analyses we consider any possible configuration, including ones where the circuit is more liberal than the panel median, and where the whistleblower is on the opposite side of the circuit from the panel median.

<sup>6</sup>In the Supplemental Appendix, we show that our results are robust to using an alternative operationalization of the whistleblower based on the votes on the panel.

<sup>7</sup>Note that the whistleblower is always on the same side of the panel median as the circuit median, but can be on either side of the circuit median.

FIGURE 4 Illustrations of Dissents Both Consistent and Inconsistent With the Theory



See text for details.

conservatively, thereby creating a non-suspicious decision. The most liberal judge casts a liberal dissent, perhaps to assert her sincere opposition. In Figure 4C, the most liberal and most conservative judges on the panel join to cast a suspicious liberal decision. The panel median dissents, perhaps on technical grounds, even though based on ideology alone she should prefer a liberal decision whenever her more conservative colleague does.<sup>12</sup> Finally, in Figure 4D the whistleblower dissents from a *non-suspicious* decision; in theory, she should both agree with such a disposition, and expect that her dissent will not trigger a review anyway. We employ flexible model specifications that allow us to distinguish among these different scenarios. In doing so, we can validate our empirical results by demonstrating that the effects of preferences are *only* present in circumstances in which the theory predicts that such effects should occur.

## Evaluating En Banc Review

We begin by testing the review predictions, and then turn to evaluating the reversal predictions. The first three

<sup>12</sup>Such a scenario may also occur in the data due to measurement error. In particular, the GHP scores may not sufficiently discriminate among judges of the same party; that is, the scores may classify one Republican judge on a panel as slightly more conservative than another Republican on a panel when the opposite is true. An alternative approach would be to count dissents as *whistleblower dissents* if the actual dissenter is “close enough” to the projected whistleblower. Our approach is thus conservative, as we are likely classifying many dissents that actually fall under the category of whistleblowing as non-whistleblowing.

models in Table 2 present weighted logit models of *en banc* review, where the dependent variable is coded 1 if a circuit voted to rehear a case *en banc*, and 0 otherwise. (Models 4–6 are models of reversal—we return to them below.) Each model contains our core specification, as follows. The theory predicts that a) the preferences and behavior of the whistleblower will influence the probability of review, but only on suspicious decisions; and b) these effects will be conditioned by the distance between the panel median and the circuit median. Accordingly, for our main empirical test, we include the following predictors: *whistleblower dissent*, *suspicious decision*, *panel-whistleblower distance*, and *panel-circuit distance*. To test our hypotheses, we include the three-way interactions between: a) whistleblower dissent, suspicious decisions, and panel-whistleblower distance; and b) whistleblower dissent, suspicious decisions, and panel-circuit distance. We also include all the two-way interactions among the respective three-way interactions as their own constituent terms in the model.<sup>13</sup> Model 1 includes only these predictors.

As noted above, dissent and *en banc* review also occur for reasons outside the theory. Thus, in Model 2, we include several additional predictors. First, we define an additional variable *non-whistleblower dissent* as a dissent

<sup>13</sup>An alternative strategy would be to allow the interaction of *whistleblower dissent*  $\times$  *suspicious decision* to enter the models as a single variable, coded 1 if the whistleblower dissented in a suspicious case, and 0 otherwise. Because interactive models are difficult to interpret when all main effects are not included, we choose to enter all the main effects separately and then analyze the relevant interactions.



TABLE 2 Regression Models

|  | Review Models   |                 |                 | Reversal Models |                 |                 |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|  | (1)             | (2)             | (3)             | (4)             | (5)             | (6)             |
| <i>Intercept</i>   | −5.57<br>(0.16) | −6.44<br>(0.19) | −6.23<br>(0.40) | 0.11<br>(0.28)  | −0.16<br>(0.30) | −1.43<br>(0.65) |
| <i>Whistleblower dissent</i>                                 | 1.80<br>(0.51)  | 2.27<br>(0.52)  | 2.33<br>(0.55)  | 1.12<br>(0.72)  | 1.22<br>(0.73)  | 1.57<br>(0.77)  |
| <i>Susp. decisions</i>                                       | 0.27<br>(0.20)  | 0.38<br>(0.22)  | 0.49<br>(0.24)  | 0.36<br>(0.37)  | 0.35<br>(0.37)  | 0.29<br>(0.40)  |
| <i>Panel-whistleblower (P-W) distance</i>                    | 1.15<br>(0.30)  | 0.74<br>(0.35)  | 0.61<br>(0.38)  | 1.18<br>(0.52)  | 1.06<br>(0.53)  | 1.14<br>(0.57)  |
| <i>Panel-circuit (P-C) distance</i>                          | −0.77<br>(0.43) | −0.19<br>(0.47) | −0.47<br>(0.48) | −1.71<br>(0.66) | −1.58<br>(0.67) | −2.09<br>(0.72) |
| <i>Susp. decision × (P-W) distance</i>                       | −2.04<br>(0.37) | −1.47<br>(0.44) | −1.49<br>(0.47) | −1.44<br>(0.68) | −1.26<br>(0.69) | −1.22<br>(0.74) |
| <i>Susp. decision × (P-C) distance</i>                       | 3.54<br>(0.51)  | 2.98<br>(0.56)  | 2.96<br>(0.58)  | 2.83<br>(0.85)  | 2.71<br>(0.86)  | 3.11<br>(0.92)  |
| <i>Whistleblower dissent × Susp. decision</i>                | 1.03<br>(0.61)  | 0.88<br>(0.61)  | 1.06<br>(0.65)  | −0.31<br>(0.88) | −0.29<br>(0.88) | −0.54<br>(0.93) |
| <i>Whistleblower dissent × (P-W) distance</i>                | −0.38<br>(0.77) | −0.10<br>(0.83) | −0.03<br>(0.85) | −2.22<br>(1.76) | −2.04<br>(1.77) | −1.73<br>(1.92) |
| <i>Whistleblower dissent × (P-C) distance</i>                | 1.48<br>(0.97)  | 1.14<br>(0.98)  | 1.44<br>(1.01)  | 0.55<br>(2.14)  | 0.42<br>(2.13)  | −0.47<br>(2.23) |
| <i>Whistleblower dissent × Susp. decision × P-W distance</i> | −0.83<br>(1.01) | −1.16<br>(1.06) | −1.62<br>(1.07) | 1.19<br>(1.99)  | 1.00<br>(2.00)  | 0.53<br>(2.14)  |
| <i>Whistleblower dissent × Susp. decision × P-C distance</i> | −0.95<br>(1.17) | −0.71<br>(1.19) | −0.75<br>(1.21) | 0.91<br>(2.39)  | 0.96<br>(2.38)  | 1.61<br>(2.51)  |
| <i>Non-whistleblower dissent</i>                             |                 | 2.47<br>(0.13)  | 2.53<br>(0.14)  |                 | 0.35<br>(0.19)  | 0.26<br>(0.21)  |
| <i>Panel reversed lower court</i>                            |                 | 0.74<br>(0.11)  | 0.78<br>(0.11)  |                 | 0.25<br>(0.16)  | 0.30<br>(0.18)  |
| <i>N</i>   | 5589            | 5589            | 5589            | 772             | 772             | 772             |
| <i>AIC</i>   | 127.10          | 129.95          | 190.72          | 934             | 932             | 947             |

Models 1–3 present models of *En Banc* review. Each of these models is a weighted logit. Models 4–6 are models of whether the full circuit reverses the panel, among those cases granted review. These models are regular logits. Standard errors in parentheses. Fixed effect for circuits, years, and issues are estimated in models 3 and 6, but not displayed.

by a judge who we did not identify as the whistleblower. We allow this variable to enter the model as a main effect; to the extent that dissents by judges other than the whistleblower may boost the likelihood of review, this variable accounts for that. Next, whether the three-judge panel reversed the district court decision (or agency decision) has also been shown to be a strong predictor of *en banc* review (George 1999); to account for this, we include the variable *panel reversed lower court*. Finally, as a robustness check,

Model 3 adds fixed effects for circuits and years to account for any heterogeneity across time or space, or both. We also include fixed effects for issue areas—following Clark (2009), we classify each case into one of four categories: civil rights, criminal procedure, economic issues, and miscellaneous.

Due to the number of interaction terms in a non-linear model, the coefficients on the key predictors are not readily interpretable. We thus move to examining

substantive quantities of interest to test the theoretical predictions. Looking across models, we see that the coefficients and standard errors are very similar. The AIC measures, which assess model fit while accounting for the number of covariates, suggest that Models 1 and 2 are superior to 3. We use the results from Model 2 going forward. To present the results of the model, we calculate “average predicted probabilities” using the observed values in our data (Gelman and Pardoe 2007; Hanmer and Kalkan 2013). In addition, we use simulations of the coefficients from the model (based on variances and covariances) to compute 95% confidence intervals on all of our quantities of interest.<sup>14</sup>

**Counter-preference Signaling Results.** We begin our analysis of review decisions by evaluating the counter-preference signaling predictions, which are that the probability of review of suspicious decisions, in both cases with whistleblower dissents and in unanimous cases, decreases as the whistleblower moves farther away from the panel median. Figure 5A presents the test of the Counter-preference Signaling Review Hypothesis. The vertical axis depicts the probability of review, while the horizontal axis depicts the distance between the panel median and the whistleblower. (One can think about this by assuming the panel is less conservative than the circuit: The whistleblower “slides” away from the panel and toward the circuit as it moves to the right.) The shaded region around the line shows the 95% confidence interval.

Beginning with suspicious decisions with whistleblower dissents (the solid line in Figure 5A), the results clearly support the Counter-preference Signaling Review Hypothesis. The largest probability of review occurs when the whistleblower is closest to the panel median, and declines as the whistleblower moves farther away. The effect is substantively large. The predicted probability of review when the ideology of the whistleblower equals that of the panel majority is .17 (95% confidence interval of [.10, .26]), a strikingly high rate given the rarity of *en banc* review (recall the overall rate of *en banc* in our data is about .01). When the whistleblower is most distant from the panel majority, the predicted probability of review declines to .03 [.01, .05].

How does the location of the whistleblower affect review in unanimous decisions? The dashed line depicts

the probability of review in suspicious decisions from which neither the whistleblower nor any other judge dissents. Consistent with the Counter-preference Signaling Review Hypothesis applied to unanimous cases, the rate of review does decline at a statistically significant rate as the whistleblower moves away from the panel median.<sup>15</sup> However, Figure 5A reveals that the effect is not substantively meaningful for the simple fact that the average predicted rate of review for cases without dissent is always very small.<sup>16</sup> Even when the whistleblower has the same ideology as the panel median (meaning the entire panel is equally distant from the circuit), the probability of review is about .009 [.007, .012].

**Panel-circuit Distance Results.** We now turn to analyzing the Panel-circuit Distance Review Hypothesis, which predicts that whistleblower dissents are more likely to trigger review when the panel majority is further from the full circuit. Figure 5B presents the results of this test. The vertical axis again depicts the probability of review, while the horizontal axis depicts the distance between the panel and circuit medians, moving closer from left to right.

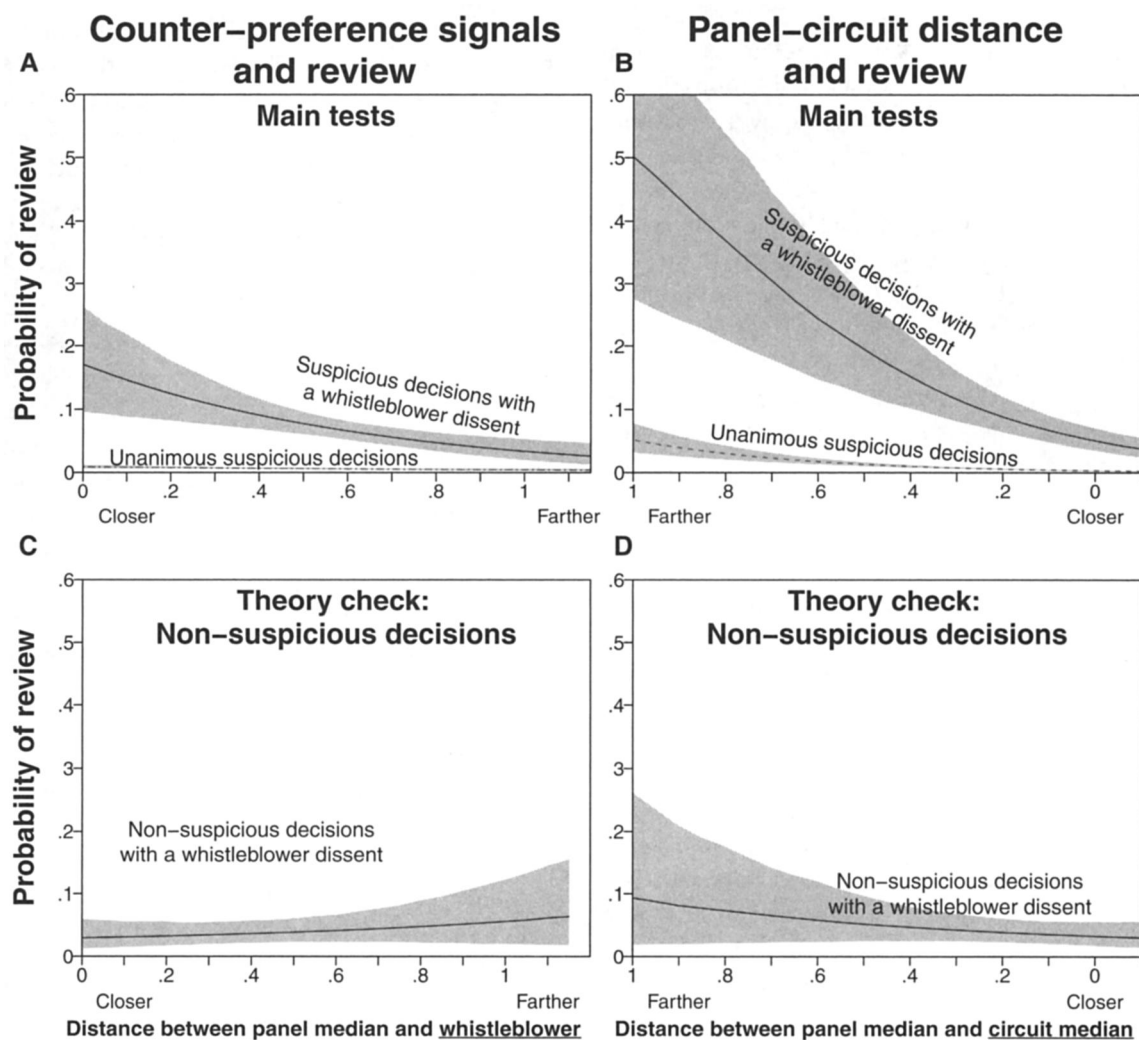
The results support the Panel-circuit Distance Review Hypothesis. Recall that this hypothesis is a prediction about changes in the *marginal effect* of dissent on the probability of review as the panel majority moves closer to the full circuit. When the panel is the maximum distance away from the full circuit, a unanimous suspicious decision has about a .05 [.03, .08] probability of being reviewed. This shows that full circuits do review suspicious unanimous decisions by very distant panels at a substantial rate (compared to the baseline probability of *en banc* review). For the same panel, however, a whistleblower dissent increases that probability of review of a suspicious decision all the way to .51 [.28, .71], a huge increase of 46 percentage points. Even when the panel is only .4 units (the 75th percentile) away from the full circuit, the differences are dramatic. For such panels, the probability of review increases from .007 [.006, .009] in a unanimous suspicious decision to .11 [.08, .16] with a whistleblower dissent. Finally, when the panel median approaches the same ideology as the circuit median, the probability of review

<sup>14</sup>Our inferential approach is in the spirit of King, Tomz, and Wittenberg (2000). After running our regression models, we run simulations to get estimates of the distribution of the relevant coefficients. We then use these simulations to both generate substantive quantities of interest and make probabilistic statements about the strength of the theoretical predictions.

<sup>15</sup>In actuality, of course, the whistleblower has not “blown the whistle” in unanimous cases. For ease of presentation throughout the discussion of the results, we refer to the potential whistleblower as “the whistleblower” even in unanimous cases.

<sup>16</sup>As we show below, when the panel majority is far from the full circuit, unanimous suspicious decisions are reviewed at a substantively meaningful rate. What Figure 5A shows is that for the average panel in which all three members share similar ideologies, the chance of review given a unanimous decision is very small.

FIGURE 5 Predicted Probabilities of *En Banc* Review



A) How the probability of review changes as the distance between the panel median and whistleblower increases, in suspicious decisions with whistleblower dissents and in unanimous suspicious decisions  
B) How the probability of review changes as the distance between the panel median and circuit median decreases, in suspicious decisions with whistleblower dissents and in unanimous suspicious decisions.  
C) How the probability of review changes as the distance between the panel median and whistleblower increases, in non-suspicious decisions with whistleblower dissents. D) How the probability of review changes as the distance between the panel median and circuit median decreases, in non-suspicious decisions with whistleblower dissents.

is effectively zero (.003) in a unanimous case; it increases to .04 [.02, .06] in the presence of a whistleblower dissent. Thus, a whistleblower dissent is most likely to trigger review when the panel median is distant from the circuit, and the marginal effect of dissent is also largest when this occurs, as our theory predicts.

**Evaluating Dissent versus Unanimity.** Finally, we evaluate the Dissent versus Unanimity Review Hy-

pothesis, which predicts that suspicious decisions with whistleblower dissents are more likely to be reviewed than unanimous suspicious decisions. Consistent with the hypothesis, Figures 5A and 5B, respectively, show that for any given distance between the panel median and the whistleblower or the panel and circuit medians, the probability of review of a suspicious decision with a whistleblower dissent is always higher than the probability of review of a unanimous suspicious decision.

Thus, we see that whether there is a dissent—as well as who dissents—is a key driver of *en banc* review.

### Theory Check: Evaluating Non-suspicious Decisions.

According to our theory, non-suspicious decisions should not be reviewed *en banc*, nor should whistleblowers dissent from them. However, such reviews and dissents do occur, for reasons outside the theory. This allows us to validate our claims that the dynamics examined by our theoretical model are driving the results in Figures 5A and 5B. We do so by demonstrating that these effects of ideology do *not* hold for non-suspicious decisions.

First, Figure 5C illustrates the effect of the distance between the whistleblower and the panel median on the probability that a non-suspicious decision with a whistleblower dissent will be reviewed. It shows that there is no relationship between this distance and the likelihood of review. The confidence intervals around the line do not include zero, indicating that whistleblower dissents in non-suspicious decisions *do* increase the overall the probability of review. But, as our theory predicts, this increase in the probability of review does not vary in the location of the whistleblower. Intuitively, this means the following: consider a panel composed of two liberal judges and one conservative whistleblower, deciding a case in a conservative circuit. If the conservative judge dissents from a conservative decision, this increases the probability of review—cases with any type of dissent are more likely to be reviewed than unanimous decisions. But, unlike the effect in suspicious decisions seen in Figure 5A, the effect is the same regardless of *how* conservative the whistleblower is.

The same is true for the effect of panel-circuit distance in non-suspicious decisions. Figure 5D presents a parallel result to that presented in Figure 5B. It depicts the probability that a non-suspicious decision with a whistleblower dissent will be reviewed, as a function of the distance between the panel and the circuit median. Again, such dissents significantly increase the chance of a case being reheard *en banc*. Here the slope of the line is negative and marginally significant (there is a 90% probability the leftmost point on the line is higher than the rightmost). But the increase in probability is only meaningful in panels that are very distant from the full circuit. In addition, the magnitude of the effect of a whistleblower dissent on review is substantially smaller than the corresponding magnitudes in whistleblower dissents from suspicious decisions. Finally, while we do not depict this in the interest of clarity, the probability of reviewing a non-suspicious *unanimous* decision is always less than 1%, as we would expect.

## Reversals

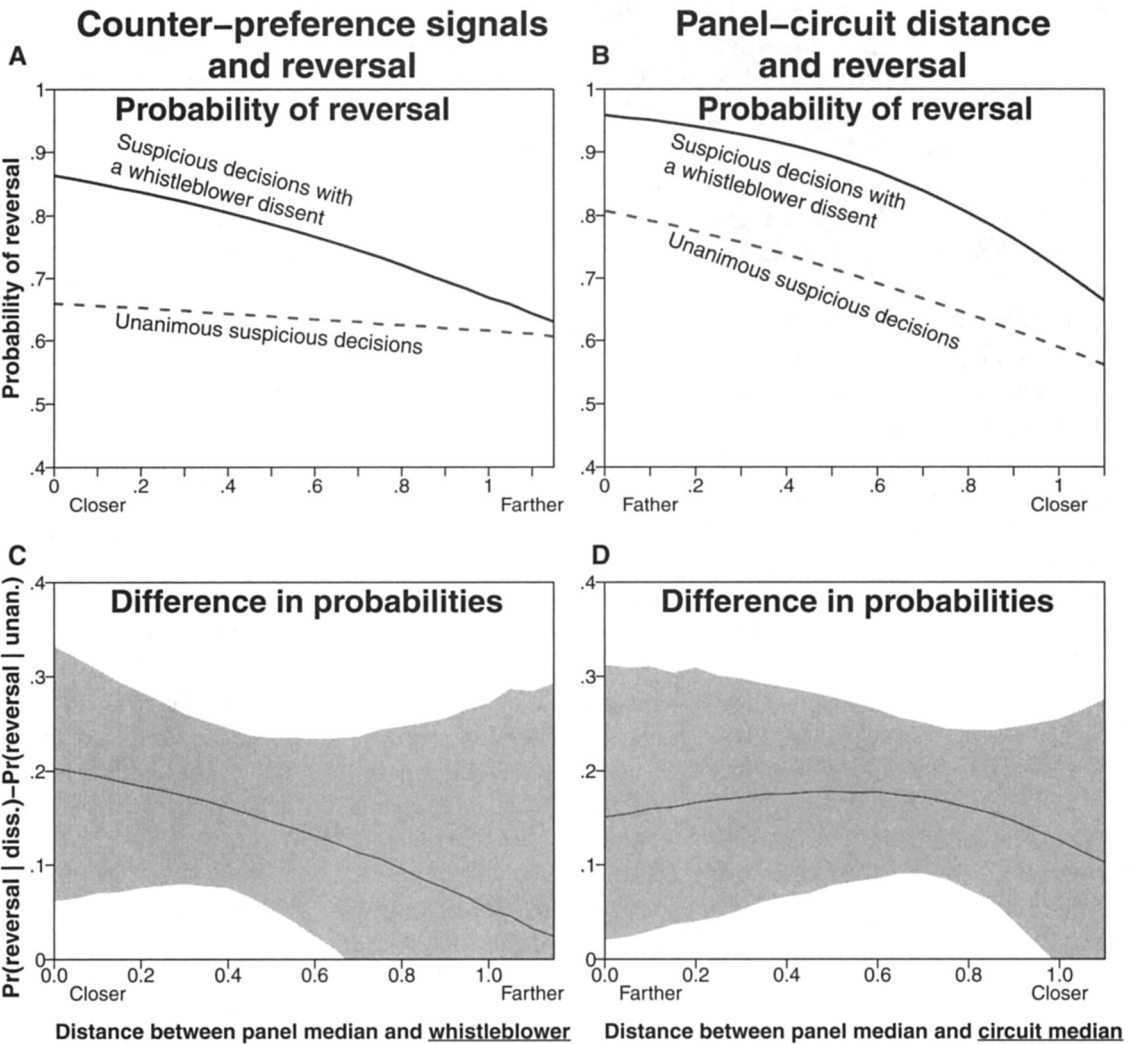
Next, we analyze the full circuit's decision whether to reverse or uphold the panel's decision in the cases that are reheard *en banc*. In our data, the full circuits reversed 68% of the decisions they reheard *en banc*. Models 4–6 in Table 2 present models of reversal that parallel Models 1–3 in terms of the predictors included in each model. We use Model 5 to generate predicted probabilities, which are plotted in Figure 6. We focus solely on the probability of reversal in suspicious decisions because the theory predicts that non-suspicious decisions should not be reviewed, and thus, makes no predictions about how the full circuit should treat such cases, should they be reviewed.<sup>17</sup> We test three reversal hypotheses: the first about the effect of the whistleblower's distance from the panel majority, the second about the effect of the distance between the panel and the full circuit, and the third about the effect of whistleblower dissents as compared to unanimity. Because the probabilities of reversal in cases with and without dissent are more similar than the comparable probabilities of review, we plot the estimates of reversal without uncertainty in Figures 6A and 6B for both the Counter-preference Signaling and Panel-circuit Distance predictions. We then plot the *difference* between the two estimates, along with the 95% confidence intervals around that difference.

We begin by evaluating the Counter-preference Signaling Reversal Hypothesis and the Panel-circuit Distance Reversal Hypothesis. These predict that the probability of reversal should decline in unanimous suspicious cases both as the whistleblower moves farther away from the panel median and as the panel median moves closer to the full circuit, respectively. The dashed lines in Figures 6A and 6B depict the probability of reversal in unanimous suspicious decisions. As predicted, the probability of reversal is decreasing in both distances. However, the negative slope is statistically significant only with respect to the distance between the panel and circuit medians (there is only a 70% probability that the slope of the line for panel-whistleblower distance is negative). Thus, the data do not support the Counter-preference Signaling Reversal Hypothesis. However, with respect to the Panel-circuit Distance Reversal Hypothesis, the magnitude of the effect of panel-circuit distance is sizable. When the full circuit reviews a unanimous decision by a

<sup>17</sup>In fact, two-thirds of the cases reviewed *en banc* in our data were of suspicious decisions. An alternative empirical strategy would be to include only suspicious decisions in the regressions in Models 4–6 in Table 2. The results we present in Figure 6 are substantively and statistically the same if we do this.



FIGURE 6 Predicted Probabilities of *En Banc* Reversal



A) How the probability of reversal changes as the distance between the panel median and whistleblower increases, in suspicious decisions with whistleblower dissents and in unanimous suspicious decisions. B) How the probability of reversal changes as the distance between the panel median and circuit median decreases, in suspicious decisions with whistleblower dissents and in unanimous suspicious decisions. C) The difference in the probability of reversal in suspicious decisions with a whistleblower dissent versus unanimous suspicious decisions, as the distance between the panel median and whistleblower increases, along with 95% confidence intervals (i.e., the difference between the two lines in [A]). D) The difference in the probability of reversal in suspicious decisions with whistleblower dissents versus unanimous suspicious decisions, as the distance between the panel median and circuit median decreases, along with 95% confidence intervals (i.e., the difference between the two lines in [B]).

maximally distant panel, the probability of reversal is .82 [.65, .92]. This declines to .56 [.46, .67] when the panel median has the same ideology as the full circuit—this is well below the average probability of reversal across all cases.

Turning to the probability of reversal in suspicious decisions *with* a whistleblower dissent, it is easy to see from the solid lines in Figures 6A and 6B that such decisions are not always reversed, contrary to the theory's strong prediction. As noted above, the fact that this

prediction fails is not surprising, given that both dissents and *en banc* review occur for reviews outside the model. In fact, the probability of reversal declines across both panel-whistleblower distance and panel-circuit distance in suspicious decisions with whistleblower dissents. (Both of the negative slopes are statistically significant.) While this is outside the scope of the model, it is notable that the highest likelihood of reversal occurs when a whistleblower most credibly signals severe non-compliance—when she is close to the panel median, and when the panel median and full circuit are far apart.

Finally, consistent with the Dissent versus Unanimity Reversal Hypothesis, Figure 6 reveals that the probability of reversal is always higher in cases with whistleblower dissents than in unanimous cases. Figures 6C and 6D show that this difference in probabilities is significant across the majority of the range of panel-whistleblower distance and virtually all of the range of panel-circuit distance. Thus, conditional on review, suspicious decisions with whistleblower dissents are more likely to both be reviewed *and* reversed than unanimous suspicious decisions.

## Discussion and Conclusion

Oversight is inherently difficult in large hierarchies, and the judiciary is no exception. Most cases that reach the federal courts end at the district courts. Of those appealed to the circuit courts, only a fraction are reheard either *en banc* or by the Supreme Court. On its face, this would suggest an insurmountable principal-agent problem. Yet our article shows that this pessimism is unwarranted—full circuits can successfully delegate decision making to three-judge panels. While our article does not provide a comprehensive account of every aspect of *en banc* review, our results do suggest that the combination of well-known preferences and informative signaling aid full circuits in selecting cases in which the panel's decision is truly worth reviewing. And while judges are not “whistleblowers” in the traditional sense, dissents operate as meaningful “whistles” with which judges can signal potential non-compliance to their colleagues in the full circuit.

While the importance of dissent within studies of the judicial hierarchy has long been understood, we show here that not all dissents are equal—some whistleblowers are more influential than others. Based on a formal theory in Beim, Hirsch, and Kastellek (2014), we identify nuanced, novel predictions that describe which dissents will be most likely to lead to discretionary review. We show that a whistleblowing dissent is most effective when the panel majority is furthest from the full circuit—an

intuitive prediction. We then show a more nuanced and surprising result. The effect of a whistleblower's dissent on the likelihood of review is strongest when she is ideologically closest to the panel, while the effect of her silence is strongest when she is ideologically most distant from the panel. We show, further, that these effects exist *only* when a panel makes a decision of which the full circuit is suspicious *ex ante*. Thus, we find that strategic communication is conditional on the relationship between the receiver and the sender *and* on the material being communicated. While other work has found such asymmetries with respect to full circuits and panels, our work is the first to show that the power of dissent is also conditional in this manner, and it is the first to empirically identify which whistleblowers' dissents are most likely to be heeded.

More broadly, our results help clarify how important dissent is as a communication device in the judicial hierarchy. As we noted earlier, a wealth of previous studies have shown a strong and systematic relationship between dissent and discretionary review. However, one explanation for this finding is that dissent is simply correlated with other factors that also increase the probability of discretionary review, and thus, the causal effect of dissent might not be as large as suggested by this literature—or even exist at all. (A similar debate has arisen over whether *amicus curiae* briefs really have a causal effect on the Supreme Court's case selection; see Caldeira, Wright, and Zorn [2012].) However, our finding that the impact of dissent is mediated by the preferences of judicial whistleblowers suggests that at least some of this relationship is due to the signal of dissent itself. The reason is that, given random assignment on the Courts of Appeals, the assignment of a judge with a particular preference to a panel is effectively random (conditional on circuit). Thus, the fact that *different dissenters* create different probabilities of review, and not simply the *act of dissent*, makes it unlikely that other unobserved characteristics of cases are driving our results.

In addition, our study goes beyond most existing work by connecting the review and reversal decisions with an integrated formal and empirical model. We show that the same decisions that are most likely to be reviewed are also those most likely to be reversed, particularly suspicious decisions with dissenting opinions. This result is consistent with higher courts relying on informative dissents to relay non-compliance by three-judge panels.

At the same time, our study focuses on a particular role for dissent, and thus, there remain many open questions about its importance—both at the *en banc* stage and across appellate courts more broadly. We argued earlier that *en banc* review is mainly a mechanism for error

correction, and our results suggest this is correct. Yet, it is well known that law creation is another important component of full circuit review. What is the role of dissent when the law is unformed or unclear? This question is even more pertinent with respect to the Supreme Court, given the priority the justices place on law creation over error correction when weighing which cases to review. How do signaling and counter-preference signaling inform appellate court decision making when judges are creating and modifying the law? Finally, how do judicial reputation and prestige affect the ability of a judge to communicate via dissent either up or down the hierarchy (Bhattacharya and Smyth 2001; Klein and Morrisroe 1999)? Theoretical and empirical work on these fronts would further increase our understanding of the importance of dissent in the judicial hierarchy.

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## Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's website:

**Table S1:**Regression Models of Review, Using the Votes-Based Measure of the Potential Whistleblower.

**Figure S1:**Predicted Probabilities of En Banc Review in Non-Suspicious Decisions, Using an Alternative Measure of the Whistleblower.