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The Judicial Signaling Game: How Judges
Shape their Dockets

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Abstract

Contrary to traditional wisdom, judges are not passive receivers of their agendas. Instead, many judges attempt to shape their dockets by encouraging potential litigants to bring particular cases. This encouragement takes the form of judges signaling their own positions on an issue as well as their colleagues' expected support. This process is modeled as a signaling game, with both separating and pooling equilibria resulting. The existence of pooling equilibria is of particular interest, as it indicates some judges misrepresent the chances of success of a case in order to induce desired legislation.

THE JUDICIAL SIGNALING GAME: HOW JUDGES SHAPE THEIR DOCKETS*

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ABSTRACT

Contrary to traditional wisdom, judges are not passive receivers of their agendas. Instead, many judges attempt to shape their dockets by encouraging potential litigants to bring particular cases. This encouragement takes the form of judges signaling their own positions on an issue as well as their colleagues' expected support. This process is modeled as a signaling game, with both separating and pooling equilibria resulting. The existence of pooling equilibria is of particular interest, as it indicates some judges misrepresent the chances of success of a case in order to induce desired legislation.

INTRODUCTION

Unlike the elected branches of government, the Judiciary is institutionally constrained from initiating policy. This does not mean that judges have no control over their own dockets. Although judges depend on litigants to initiate litigation, judges encourage potential litigants to bring particular cases. Judges have private information of the expected outcomes of future cases as they know their own position and have inside information on their colleagues' positions; consequently judges can credibly signal the prospects of success of a given case. Signaling includes a judge volunteering comments in a speech that an as yet to be appealed decision of a lower court is constitutionally

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unsound, or a majority opinion including obiter dicta suggesting that the author would provide the swing vote to the dissenters under different circumstances. This information constitutes signals which may convince a litigant to bring a case, and so creates an opportunity for the judge to shape the law on that topic.

The notion that judges signal the outcome of future cases in order to actively shape their dockets stands in sharp contrast to the traditional view of judges as passive disinterested recipients of cases brought before them by independent parties¹. Once cases are brought, certiorari and other powers not to hear provide some discretion,² but the traditional view holds that judges have no other mechanism to seek a case on an issue on which they wish to shape the law. Most contemporary court scholars take a less platonic view of judges, recognizing the influence of ideology and judicial potential for strategic action. These scholars recognize that judges have an incentive to shape their agendas, but they focus almost exclusively on institutional mechanisms, such as certiorari and precedent; they fail to seriously consider how judges use the extra-institutional mechanism of signaling to induce the cases they seek.

This article provides a systematic account of how judges shape which cases are brought before them, by transferring their private information regarding a case's potential for victory. It uses game theory and economic equilibrium concepts to establish what equilibrium outcomes occur under judicial signaling. As well as showing how and when

¹ For example DORIS MARIE PROVINE: CASE SELECTION IN THE UNITED STATES SUPREME COURT, at 7 (1980).

² More than half of State courts of last resort have certiorari-like exclusion powers. See Lawrence Baum, *Policy Goals in Judicial Gate-Keeping: A Proximity Model of Discretionary Jurisdiction*, 21 AM. J. OF POL. SCI. 13, at 13 (1977).

signaling occurs, this analysis reveals an important result: that under certain conditions, judges have an incentive to misrepresent the chances of success of some cases.

The degree of directness of judicial signals is constrained by mores of judicial circumspection, which limit judicial communication to the public. This particularly applies to communication regarding the prospects of potential litigation, because the Rule of Law requires that cases not be prejudged. Judicial indications of support for a position, therefore, can only occur in a limited number of forums and generally must be implicit or abstract, and thus without guarantee. How, then, can litigants distinguish between genuine signals and cheap talk – that is, potentially misleading signals? In this article, I show that two primary factors determine the reliability of judicial signals: first, the level of alignment between judicial and litigant interests, and second, the cost of signaling.

Signaling occurs in two classes of cases. In the first, judges want to hear cases only if the position they support is ultimately successful. Then, the interests of the judge and the litigant arguing that position are fully aligned. Consequently, there is a full transfer of information, as any judicial signal is reliable. In the second class of cases, judges also want to hear cases even if they cannot gain majority support for their position. This is because judges sometimes seek vehicles to shape the law, either through their own persuasiveness, or by giving prominence to the issue in the hope of raising public awareness and pressuring other decision-makers. While the class of the public who support the same position may benefit from such action, the individual litigants' benefit from this publicity is likely to be outweighed by the enormous cost of an unsuccessful litigation. Consequently, in the second class of cases, there is only partial alignment of

interest between judges and litigants who support the same position. In this second class of cases, judicial representations are sometimes reliable and other times not.

Judges have to decide whether to signal, and whether to signal sincerely or ambiguously, and how overtly to signal. The results of the game show the optimal strategy for these three decisions, for two types of judge: those facing winning and those facing losing cases. With low credible signaling costs, pooling equilibria occur, in which both types of judge signal a winning case and litigants cannot distinguish between them. With credibility only satisfied by greater signaling costs, separating equilibria exist in which each type of judge signals truthfully and litigants can differentiate between the two types, and thus accurately predict their chances of success.

To explore what signaling consists of in the judicial context, section I presents some instances of signaling. Section II introduces more formal signaling concepts and spells out the assumptions in the signaling model. Section II also uses the existing agenda setting literature to assess the empirical merit of the game's signaling assumptions. Section III presents the game and its implications. The game models judicial choice over a continuum of endogenously determined signaling options. In conclusion, future extensions of the judicial signaling model are considered; judges' use of signals to legislatures and lower courts is particularly ripe for such analysis.

I. JUDICIAL SIGNALING THEORIES AND EXAMPLES

According to one judge interviewed by H.W. Perry, if a judge wants to hear a case in a certain area, “[h]e says something [in an opinion] that might indicate that the court would be willing to hear a case which brought up certain issues. We say this is something that we are not deciding here, but that it is something that the Court might want to

resolve... I think generally that people are sometimes aware of what a justice might be interested in.”³

To further illustrate what is meant by judicial signaling, this section highlights some recent examples of signaling from the Supreme Court justices. But signaling could be illustrated by drawing from cases from other courts and time periods; the model applies generally.⁴

Dissents are, among other things, common forms of signaling. Alternative theories are unable to fully explain the phenomenon of the dissent. A published dissent is not an attempt to convince the majority of their error — this could explain circulated dissents, but by the time of publication, such an effort has been lost. Alternatively, dissents have been explained as unsuccessful threats: judges circulate dissents in an attempt to coerce the majority away from their position.⁵ Under this theory, publication is necessary, or else future threats would not be credible. But the damage which underlies the threat is presumably harm to judicial legitimacy, which applies equally to the dissenter as to members of the majority, thus rendering the threat non-credible. And since every judge has an interest in the legitimacy of the Judiciary, dissents are difficult to explain as criticism for their own sake.⁶

Yet judges occasionally harshly emphasize their displeasure when it is clearly too late to influence the decision, for example by extravagantly damning their colleagues. For

³ H.W. PERRY: DECIDING TO DECIDE, at 213 (1994).

⁴ Although signaling will be more influential when practiced by higher courts than courts of first instance, as signaling primarily delineates the boundaries of law and policy questions.

⁵ LEE EPSTEIN AND JACK KNIGHT, THE CHOICES JUSTICES MAKE, at 59 (1998).

⁶ See PERRY, *supra* note 3 at 174, who details another disincentive for publishing dissents.

example, in response to his colleagues ruling that the death penalty cannot apply to mentally retarded defendants, Justice Scalia recently awarded his colleagues “the Prize for the Court’s Most Feeble Effort to fabricate” evidence of the majority’s argument.⁷ Judges also express their displeasure at times by reading their dissents aloud from the bench. Justice Scalia did this in another recent death penalty case, *Roper v. Simmons*, when the Supreme Court held that the death penalty cannot apply to juvenile defendants,⁸ and when the court held sodomy laws unconstitutional.⁹

All of these elements are explicable if dissents are interpreted not as off-equilibrium gamesmanship or poor-losership, but instead as strategic attempts to establish a feasible alternative future majority. The purpose of providing this alternative is to suggest that future decisions need not necessarily arrive at the same conclusion. This theory explains the existence of highly critical attacks on majority opinions, such as the emphatic example above, despite the value placed on judicial circumspection. For if dissents are signals, these signaling efforts are bolstered by assertions of the weakness of the precedent being forged. Establishing the weakness of the majority’s case supports any claim of a possible future contrary outcome, and thus encourages litigants to bring the cases individual judges seek.¹⁰

Other forms of judicial expressions can also be signals to litigants of anticipated outcomes, including majority opinions. One example is the June 2003 case of Federal

⁷ *Atkins v. Virginia*, 536 US 304, at 347 (2002).

⁸ 543 US __ (2005).

⁹ *Lawrence v. Texas*, 123 S. Ct. 2472 (2003).

¹⁰ Arguably, such dissents could also embolden lower courts to circumvent the precedent, further encouraging litigants to bring cases challenging that precedent.

Election Commission v. Beaumont in which a corporate contributor unsuccessfully challenged a longstanding ban on corporate electoral contributions.¹¹ This decision constituted a rich opportunity for justices to signal the type of argument that would be most persuasive in the pending September 2003 challenge to McCain-Feingold campaign Act. As one commentator noted, McCain-Feingold law supporters “were quick to derive encouragement” from Beaumont, as Justice Souter’s majority opinion repeatedly emphasized the need for “deference to legislative choice” in campaign finance.¹²

Concurrences can also constitute signals. In the same case, Justice Kennedy stated in concurrence that corporate contributions can be regulated more closely than corporate expenditures. But he stated: “were we presented with a case in which the distinction between contributions and expenditures under the whole scheme of campaign finance regulation were under review, I might join Justice Thomas’ [dissenting] opinion”. This is a common judicial strategy.¹³ It is a means of signaling potential future grounds for differentiation, with the purpose of encouraging current losers to continue to pursue this field of litigation.

Judges can also signal what they do not want to hear, which can be expected to most commonly arise in majority opinions and their supporting cases. For example, in the Supreme Court’s landmark affirmative action case in 2003, Justice O’Connor indicated

¹¹ 539 US 1, at 1-2 (2003).

¹² *Ban on Corporate Contributions Is Upheld*, N.Y. TIMES, June 17, 2003, at 20.

¹³ For another recent example, see *State Farm v. Campbell* 123 S. Ct. 1513, at 1524-1525 (2003) in which Justice Kennedy, writing for the Court, repeatedly emphasized that in this case, which introduced a new limit on punitive damages, there was only economic harm and not physical harm, implying that a different result may arise in physical damages cases.

that the court would not choose to revisit the issue of affirmative action for the next 25 years, at least in regard to higher education.¹⁴ When the Court followed through on this intention, and refused to hear an appeal of an affirmative action plan, two Supreme Court judges noted the information conveying effect that failing to act can have. The justices considered that the denial was especially “important because of what it signals about this court’s ongoing commitment to exacting judicial review of race-conscious policies” and because it “invites speculation” that a prior contrary precedent has effectively been overruled.¹⁵

Judicial signaling is not limited to published opinions. Other forms of judicial expression, such as bench opinions, speeches, articles or books can perform a similar function. The most notorious recent example was Justice Scalia’s speech in response to the 2002 Federal Appeals Court in the Ninth Circuit ruling that requiring students to recite the Pledge of Allegiance was unconstitutional as long as it contained the phrase “one nation under God”.¹⁶ While the case was on hold pending further review, Justice Scalia discussed the case as an example of a misinterpretation of the Constitution by lower courts, and went on to provide arguments to support his position.¹⁷ Six months after Scalia’s speech, an appeal was filed to the Supreme Court in the case.

Justice Scalia’s actions constituted clear signals, but the motivation for his actions is ambiguous: Justice Scalia’s own views were easily predicted prior to his comments; the case was widely regarded as inevitably going to the Supreme Court; and as a result of his

¹⁴ *Grutter v. Bollinger*, 539 US 306 (2003).

¹⁵ *Concrete Works of Colorado v. City and County of Denver*, 124 S.Ct. 556, at 560 (2003).

¹⁶ *Newdow v. U.S. Congress*, 292 F. 3d 597 (2002).

¹⁷ *Scalia, Courts Misinterpreting Church-State Separation*, <http://www.cnn.com>, Jan. 13, 2003.

comments, Justice Scalia was successfully petitioned to recuse himself. We will return to this example later, as the following analysis provides an alternative explanation to the common conclusion that Justice Scalia simply miscalculated. Essentially, the following model elucidated the trade-off between clarity in signaling and the associated increase in the cost to judicial reputation.

It is clear from the examples above that judges use signals to encourage particular cases, by indicating both their own receptivity to hear a particular case and the likely future prospects of any case. However if judges use signals, the natural question is whether these signals are reliable, or whether judges could send misleading signal.

It may seem antithetical to all accepted notions of the judicial role that judges would mislead the public in order to promote their own agendas. Yet even unusually stark judicial signals have been followed by incongruous results. The Supreme Court's 2002-2005 series of death penalty cases provides a notable example in which cases brought following unusually direct encouragement were nevertheless unsuccessful.

In *Atkins v. Virginia* the Supreme Court held in a 5:4 opinion written by Justice Stevens that executing mentally retarded criminals was cruel and unusual punishment prohibited by the Eighth Amendment. Justice Stevens stated that a comparison to execution of juvenile offenders was telling.¹⁸ Two months later, when the Supreme Court rejected an application for a stay of execution by a juvenile defendant, Justice Stevens issued what was considered an unusually forthright public statement.¹⁹ Referring to

¹⁸ *Atkins v. Virginia*, at 315 n.18 (2002).

¹⁹ See reactions in, for example, *Justices Put Court to Re-examine Execution of Teenagers*, New York Times, August 29, 2002.

Atkins, Justice Stevens wrote that “since that opinion was written, the issue has been the subject of further debate... Given the apparent consensus that exists... I think it would be appropriate for the court to revisit the issue at the earliest opportunity”.²⁰ Justice Ginsburg, with whom Justice Breyer joined, made a similar statement and joined Justice Stevens. Two months later, the court denied a writ of habeas corpus for a juvenile offender facing the death penalty.²¹ This failure was unsurprising, given that Stanford arose from original jurisdiction, under which cases seldom succeed. Despite the failure of the second attempt, this case was encouraging to death penalty opponents because Justice Souter also joined Justice Stevens’ dissent, which explicitly called for an end to that “shameful practice.” Yet two months later, the Court rejected without comment an appeal for review from a juvenile offender.²²

The judges may simply have been mistaken as to their chances of success, but this is an unsatisfactory explanation. If judges know their preferred outcomes are immediately unattainable, their only option to promote that position is to gamble that the public nature of their statements will put pressure on a colleague to switch sides. This is particularly appealing when contrary precedent currently exists, as was the background in the teen execution case. In fact, two years after the first signal from a Justice Stevens in Atkins, the Supreme Court agreed to hear the Simmons case, and to reconsider instituting a ban on the execution of underage defendants. This illustrates why judges may want to send misleading signals: in 2003, Justice Stevens wanted to see put an end to juvenile

²⁰ Paterson v. Texas, 123 S. Ct. 24, at 24 (2002).

²¹ In Re Stanford, 123 S. Ct. 715 (2002).

²² Hain v. Mullin, 123 S. Ct. 993 (2003).

executions, but lacked majority court support. Nevertheless he sent signals encouraging such litigation. The Hain case lost, but Stevens had nonetheless put the fate of juvenile defendants facing execution back on the national agenda. Within two years, Justice Kennedy had been persuaded to join such a majority.

It is impossible to prove judicial intent in any given case, but the rest of this article argues firstly, that judges generally know their colleagues' likely positions, secondly, that judges have an incentive to send misleading signals in certain circumstances, and thirdly, that the variation in the extent and cost of judicial signals can be systematically explained.

II. AGENDA-SETTING AND SIGNALING

There is a growing literature on the agenda-setting power of the Supreme Court. Examination of the Supreme Court's discretionary power over the grant of certiorari has led to recognition that the Court has the power to shape its own agenda, and in doing so, to influence the political focus of the nation. This literature is highly valuable, illustrating the strategic processes Supreme Court judges undertake in making decisions as to which cases to decide, but there is a dearth of analysis of judicial signaling actions.

One exception to the literature's lack of contemplation of the possibility of judicial signaling is Peter Linzer's analysis of certiorari.²³ Linzer assessed what can be inferred from justices 'going public,' as well as from judicial silence, and a number of other potential signals.²⁴ The other notable exception is testimony from judges that Perry collected, suggesting that judges send out signals to "invite cases." As noted above, Perry

²³ Peter Linzer, *The Meaning of Certiorari Denials*, 79 COLUM. L. REV. 1127 (1979).

²⁴ *Id.* at 1304.

quotes judges who state that the notion that the Supreme Court is a reactive institution, which has to wait for cases to come to it, “may exist more in theory than in practice”.²⁵

Despite Perry’s direct evidence from judges themselves, even the literature which explicitly contemplates strategic judicial behavior seldom considers judicial signaling. Consequently, this strategic literature struggles to provide an explanation as to why judges ever vote to grant certiorari for a case when the side they support is expected to lose. While some authors simply assume this never occurs,²⁶ a majority of judges studied by Boucher and Segal sometimes grant certiorari to cases they then vote to affirm.²⁷ This result is only irregular if it is assumed that judges’ strategic analysis is limited to the short term. While many authors have recognized that judges act strategically, their focus has largely been on short-term strategy: how judges ensure their favored outcome in any given case. For most studies, an assumption of judicial focus being short-term is implicit,²⁸ for others it is explicit.²⁹

There is no reason to assume that judges have such a myopic focus, particularly for judges with lifetime tenure. Judges may seek to have the capacity to set the law of the land (or state or region), and be willing to sacrifice their interest in a given case to find a vehicle to direct the development of the law. Although Boucher and Segal begin their

²⁵ PERRY, *supra* note 3, at 212.

²⁶ Lee Epstein, Jeffrey Segal and Jennifer Nicoll Victor, *Dynamic Agenda-Setting on the United States Supreme Court: An Empirical Assessment*, 39 HARV. J. ON LEGIS. 395, at 404 (2002).

²⁷ Robert L. Boucher & Jeffrey A. Segal, *Supreme Court Justices as Strategic Decision Makers: Aggressive Grants and Defensive Denials on the Vinson Court*, 57 J. OF POLITICS 824, at 832 (1995).

²⁸ Baum, *supra* note 2, at 16.

²⁹ See e.g., EPSTEIN AND KNIGHT, *supra* note 5, at 18.

article with the claim that “[i]t is now common... to view Supreme Court justices as policy-minded decision makers,” they, and other scholars who have studied strategic judicial action, nevertheless have failed to consider the possibility that judges may look beyond the immediate facts of any given case to long-term strategic goals. This game models one such possible strategy.

Although the agenda-setting literature is not on point, the empirical studies that literature contains are useful for assessing the reliability of the assumptions required to be made in a judicial signaling game. Section II.B is by no means a comprehensive literature review, but rather the section draws out elements relevant to this topic and useful in devising a model of judicial signaling. Before analyzing the agenda-setting literature, it is worthwhile introducing the essential concepts behind signaling models.

II.A Signaling Analysis

Economics has been used in analyses of a range of legal issues; an entire ‘law and economics’ literature has developed.³⁰ However this literature has largely limited itself to applying full information market theory.³¹ There is a powerful realm of economic

³⁰ See e.g. PETER NEWMAN (ED.), *THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW* (1998).

³¹ There are notable exceptions, such as an analysis of divergences of information in parties’ search for, and presentation of, evidence for trial – see Andrew F. Daughety & Jennifer F. Reinganum, *On the Economics of Trials: Adversarial Process, Evidence, and Equilibrium Bias*, 16 J. L., ECON. & ORG. 65 (2000); and an analysis of information available to parties but not available to, or verifiable by, a court – see DOUGLAS G. BAIRD, ROBERT H. GERTNER AND RANDALL C. PICKER, *GAME THEORY AND THE LAW* (1994). Typically, even such studies which do consider uncertainty, however, model the asymmetry of information between parties, or else when they consider judges, the judges are the less informed, rather than the more informed, player.

analysis devoted to predicting behavior under conditions of incomplete information, or uncertainty.

The question of how judges can induce parties to bring particular litigation judges seek is one of incomplete information. Judges are privy to ‘inside information’ not available to litigants, both as to their own and their colleagues’ likely positions on an issue. While interested spheres of the public analyze patterns of judicial behavior to predict judicial outcomes, such conclusions are inferential and unreliable compared with judges’ own expectations of how their colleagues will vote. As Caldera, Wright and Zorn succinctly put it: “judges deal with the same issues and a small number of individuals year after year, so knowledge about preferences is both easier to obtain and more likely to be accurate.”³²

Under conditions of incomplete information, there can be a market advantage for some informed parties to disseminate information to uninformed parties. That information is only valuable to the uninformed parties if the information is reliable, and so effective dissemination often requires authentication.³³ This dissemination and authentication process is best modeled as a signaling game.

In the judicial signaling game, judges are like sellers, and litigants are like buyers. Litigants have to decide whether to expend the resources on the good, litigation, in order to gain the utility of a winning case. A judge who wishes to hear a particular case is selling the prospect of success. Of the judges who wish to hear a case, any judge may be

³² Gregory A. Caldera, John R. Wright and Christopher J. W. Zorn, *Sophisticated Voting and Gate-keeping in the Supreme Court*, 15 J. L. ECON. & ORG. 549, at 551 (1999).

³³ Information can be made credible through costly signaling, reputation costs, competing groups making the same message, the other party independently checking, and threats of verification.

one of two types: those with a high-quality good, i.e. a winning coalition, and those with a low quality good, i.e. no support or only minority support. There are also two classes of cases: cases where a judge only wants to hear the case if the side he or she supports will win, and those the judge may wish to hear even if the side they support will lose. The second category could apply when the judge seeks a vehicle to express views or agitate for change. Any judge seeking to hear a case even if the side he or she supports will lose has a motivation to claim the goods are high-quality even if they are not. The suggestion that judges have an incentive to mislead litigants is contentious,³⁴ which is ultimately proven in the model; but for the meantime, we will assume it is possible.

If judges can be long-term strategists, they may be willing to sacrifice the outcome of a given case in favor of shaping the future direction of the law, for example by having a vehicle in which to write a strong dissent. Essentially, the two types of cases reflect two different orderings of judicial preferences. In the first class of cases, judicial preferences are:

1. Hear the case in which the supported side wins
2. Do not hear the case
3. Hear the case in which the supported side loses

The utility of judges supporting position A is confluent with the utility of litigants arguing position A. As such, each judge wants to reveal as much of their private information as they can within the limits of judicial circumspection, but does not have an

³⁴ Two of the rare articles to consider the possibility of judicial guile are S. Sidney Ulmer, *Selecting Cases for Supreme Court Review: An Underdog Model*, 72 THE AMER. POL. SCI. REV. 902, at 903 (1978); and Jeffrey Lax, *Certiorari and Compliance in the Judicial Hierarchy: Discretion, Reputation and the Rule of Four*, 15 J. OF THEORETICAL POL. 87 (2003).

incentive to send misleading signals to either type of potential litigant. Signaling still takes place and leads automatically to full revelation.³⁵

In contrast, in the second class of cases, judicial preferences reverse the second and third ordering. While the utility of judges supporting position A is correlated with the interests of litigants arguing position A, there is a divergence of interests between these two players when position A is a losing one. This is essentially because, unlike the litigant, the judge has two aims: to see the position he or she favors supported by a majority, and to find appropriate vehicles for statements he or she wishes to make. The judge may be willing to promote the second aim at the expense of the first. Although some advocacy groups may share in this willingness to sacrifice the outcome of a case for a long-term goal, most litigants are typically only concerned with the first motivation: winning the case. The difference in preferences explains the full alignment of interests between the judge and the litigant supporting a particular side in the first case, and only a partial alignment of interest in the second class of case.

In order to encourage litigation of cases they wish to hear, judges can send signals to potential litigants indicating they have a winning coalition. Because litigation is the sort of good that consumers cannot determine the value (i.e. the outcome) of prior to expending the costs of the litigation process, signaling is a particularly apt form of

³⁵ Full alignment of interests has been modeled by Thomas W. Gilligan and Keith Krehbiel, *Collective Decision-Making and Standing Committees: An Informational Rationale for Restrictive Amendment Procedures*, 3 J. L. ECON. & ORG. 287 (1987); the unrestricted amendment model would be equivalent to a full alignment of interests between judges of litigants. The uninformed party gets their ideal preference. See also Jan Potters and Frans Van Winden, *Lobbying and Asymmetric Information*, 74 PUBLIC CHOICE 269 (1992).

inducement to litigate.³⁶ Both types of judges can signal a winning coalition, but the costs of providing such a signal differs for judges with a coalition and those without.

High quality sellers generally have a lower marginal cost in signaling than do low quality sellers. If sellers and buyers repeatedly interact,³⁷ high-quality sellers develop a reputation of high quality, and so the marginal cost of signaling activity is lower.³⁸

The negative correlation between quality and cost means that high-quality sellers can afford to send signals which low-quality sellers cannot afford. If litigants only believe that a judge has a winning coalition if they observe very costly signals, judges with a winning coalition may be able to use such signals to distinguish themselves from their low-quality mimics. The conditions under which the outcome may occur are explored in the game.

II.B The Agenda-Setting Literature and the Judicial Signaling Game Assumptions

Applying signaling analysis to judicial agenda setting requires making a number of assumptions. These are: first, that judges act strategically; second, that judges draw utility from the outcome of cases; third, that judges have knowledge of the likely outcome of future cases;³⁹ and fourth, that litigants consider signals justices send when deciding

³⁶ See Philip Nelson, *Advertising and Information*, 82 J. POL. ECONOMY 729, at 752 (1974).

³⁷ With repeated dealings comes value in reputation, but signaling can be effective even in non-repetitive markets – see Michael Spence, *Job Market Signaling*, 87 QUARTERLY J. OF ECON. 355, at 355 (1973).

³⁸ J. Hirshleifer & John Riley, *The Analytics of Uncertainty in Information – An Expository Survey*, 70 J. ECON. LITERATURE 1406 (1979).

³⁹ In this game, judges are modeled as having perfect knowledge of their colleagues' future behavior, but uncertainty could be added without substantially changing the results. See David Austen-Smith and John R. Wright, *Competitive Lobbying for A Legislator's Vote*, 9 SOCIAL CHOICE WELFARE 229 (1992). Thus

whether to litigate. Although the agenda setting literature seldom addresses judicial signaling, it does encompass a different aspect of strategic judicial behavior, and so is helpful assessing the reasonableness of these four signaling assumptions.

Judges act strategically when they make forward-looking decisions which “maximize their payoffs given their beliefs about the outcomes of subsequent decision nodes”.⁴⁰ To do so requires anticipating the expected actions of other players, and devising responses in accordance with those expectations. This may involve, for example, taking an action contrary to the judge’s immediate preferences, to achieve a long-term goal or to prevent the judge’s least preferred policy outcome occurring.⁴¹

There is disagreement in the literature over the extent of strategic judicial behavior,⁴² yet numerous studies have found substantial theoretical and empirical evidence of some level of strategic behavior by judges in agenda setting.⁴³ This strategic behavior can take

an assumption of perfect knowledge does not need to be defended, only an assumption of some private knowledge of other judges’ probable behavior.

⁴⁰ See Caldera, Wright and Zorn, *supra* note 32, at 554.

⁴¹ See e.g., Epstein, Segal and Victor, *supra* note 26, at 404 and see EPSTEIN AND KNIGHT, *supra* note 5, at 13.

⁴² See e.g., Boucher and Segal, *supra* note 27, at 836, who argue the extent of strategic behavior varies by individual justice. Also compare Caldera, Wright and Zorn, *supra* note 32, at 550, who argue that judicial agenda setting is particularly “fertile soil for strategic manipulation.” with PERRY, *supra* note 3, at 11, who argues that judges deciding every case strategically would be institutionally overwhelming to the Judiciary, and so outcome-focused behavior is the exception rather than the rule.

⁴³ See e.g. Glendon Schubert, *Policy Without Law: an Extension of the Certiorari Game*, 14 STAN. L. REV. 284 (1962) and Epstein, Segal and Victor, *supra* note 24, respectively.

a number of different forms, such as bargaining or threats to publish dissents.⁴⁴

Additionally, studies have found strategic judicial behavior in non-agenda setting situations.⁴⁵ So there is considerable evidence to support the first assumption of strategic judicial action.

Judges having an interest in, and gaining value from, the outcome of cases is fundamental to the logic of strategic agenda setting. Judges sometimes feel strongly about the outcome of issues before them, as is apparent from judicial interviews, some judicial opinions, speeches and acts, such as reading opinions from the bench. In his extensive interviews with judges and their colleagues, Perry found that while judges most commonly exercise jurisprudential thinking, there are some cases that judges care strongly about.⁴⁶ In those cases, judges exercise an outcome-focused mode of judicial analysis, asking whether the side the judge supports will win on the merits, whether the case is a good vehicle to achieve the outcome they desire, or whether a better case is in the pipeline.⁴⁷

Judges also sometimes care strongly about which cases come before them, as is clear from dissents from cert as is evident from judicial statements,⁴⁸ and can be inferred from

⁴⁴ EPSTEIN AND KNIGHT, *supra* note 5, at 58.

⁴⁵ See e.g. William N. Eskridge, *Reneging on History? Playing the Court/Congress/President Civil Rights Game*, 79 CAL. L. REV. 613 (1991).

⁴⁶ PERRY, *supra* note 3, at 276.

⁴⁷ *Id.* at 278.

⁴⁸ Discussing how this practice has become more common, Justice Stevens wrote: “One characteristic of all opinions dissenting from the denial of certiorari is manifest. They are totally unnecessary. They are examples of the purest form of dicta, since they have even less legal significance than the orders of the

some judicial behavior. Epstein and Knight found evidence that judges decide whether to grant certiorari on the basis of whether a case will be decided in accord with their policy preferences. Strategic judicial actions to ensure such accord can take the form of defensive denials – refusing to take a case the judge may wish to hear, out of an expectation of being unable to garner majority support – and aggressive grants – taking a case that may not warrant review because the judge calculates it may be good for developing a doctrine.⁴⁹

Judges have the benefit of conference discussion and less formal conversations, as well as a day-to-day interaction with their colleagues, to develop private knowledge of their colleagues' proclivities. Although this evidence is necessarily indirect, a number of studies have provided evidence that judges have foreknowledge of their colleagues' future outcomes.⁵⁰ For instance, studies have found that judicial decisions depend on the

entire Court which, as Mr. Justice Frankfurter reiterated again and again, have no precedential significance at all." Singleton v. C.I.R., 99 S.Ct. 335, at 944-945 (1978). The lack of legal significance of the practice supports the argument of its informational effect.

⁴⁹ EPSTEIN AND KNIGHT, *supra* note 5, at 80.

⁵⁰ This is a fairly standard assumption in imperfect information models. *See e.g.*, Michael Rothschild and Joseph Stiglitz, *Equilibrium in Competitive Insurance Markets: an Essay on the Economics of Imperfect Information*, 90 QUARTERLY J. ECON. 629, at 632 (1976). It is also an assumption made by scholars studying the courts. *See e.g.*, Epstein, Segal and Victor, *supra* note 26, at 420; however some assume the opposite, *e.g.* Baum, *supra* note 2, at 17. One of the few studies to challenge this notion is John F. Krol and Saul Brenner, *Strategies in Certiorari Voting on the United States Supreme Court: A Reevaluation*, 43 WESTERN POLITICAL QUARTERLY 335, at 338 (1990), but arguably their results actually support the hypothesis that judges consider their colleagues' likely actions. Of the three hypotheses relating to this topic that they test, two are supported by the evidence, and the one which is not in fact relates to

level of support judges expect from other members of the court,⁵¹ implying some level of foreknowledge.⁵² These findings show both that judges can accurately anticipate their colleagues' likely actions, and so their own chances of success, and that judges' own actions vary with their likelihood of casting the pivotal vote. That is, these studies provide evidence to support each of the first three signaling assumptions.

The final assumption is that litigants consider judicial signals when weighing the decision of whether to bring litigation. Even if judges did not know their colleagues' pending positions, judges definitely possess some private information: their own vote. Pursuing litigation is a gamble, with high costs and uncertain payoffs. Any information a litigant receives from a judge as to his or her chances of success are factored into the litigant's decision whether to litigate or not.⁵³ To take an example, in death penalty cases, the litigant has little to lose in pursuing every right of appeal, and so judicial signals have minimal effect on a defendant's decision to pursue litigation. But advocacy groups may need to be more discriminating. A signal that the Supreme Court is amenable to arguments that the death penalty should not apply to a particular class, such as juveniles or the mentally retarded, is likely to result in a number of such cases being presented by

predicting the behavior of uncertain judges only.

⁵¹ See e.g., Boucher and Segal, *supra* note 27, at 832.

⁵² Saul Brenner, *The New Certiorari Game*, 41 J. OF POLITICS 649, at 651 (1979).

⁵³ Justice Scalia noted the effect of the expectation that the Supreme Court was likely to rule in the Atkins case that the death penalty was cruel and unusual when applied to retarded defendants. He stated that "the mere pendency of the present cases has brought us petitions by death row inmates claiming for the first time, after multiple habeas petitions, that they are retarded." *Atkins v. Virginia*, 536 US 304, at 353-354.

advocacy groups opposed to the death penalty. This conclusion has been supported by empirical studies.⁵⁴

Given this, in an era of litigant groups, such as the NAACP, who in aggregate are ready and willing to bring cases on almost any contentious view, judges can significantly influence their own agendas by sharing their private information. The following game examines whether a judge with a partial alignment of preferences with a potential litigant has an incentive to mislead the litigant, and how that incentive shapes the actions of judges in such a scenario.

III. THE JUDICIAL SIGNALING GAME

Players: This game models two interlinked actions: the decision of a Judge (J) on a multi-judge panel as to what sort of signal to send to potential litigants; and the choice of a potential Party (P) as to whether to pursue a legal action or not, given such signals. We are considering a Judge and a Party who each support the same position.

A simplified representation of the game, with only one judge and one litigant, is represented in Figure 1, however the model accounts for multiple players. The trading of information is like a market: judges will reveal their private information when they can benefit from doing so and the costs of signaling that information are not overwhelming.

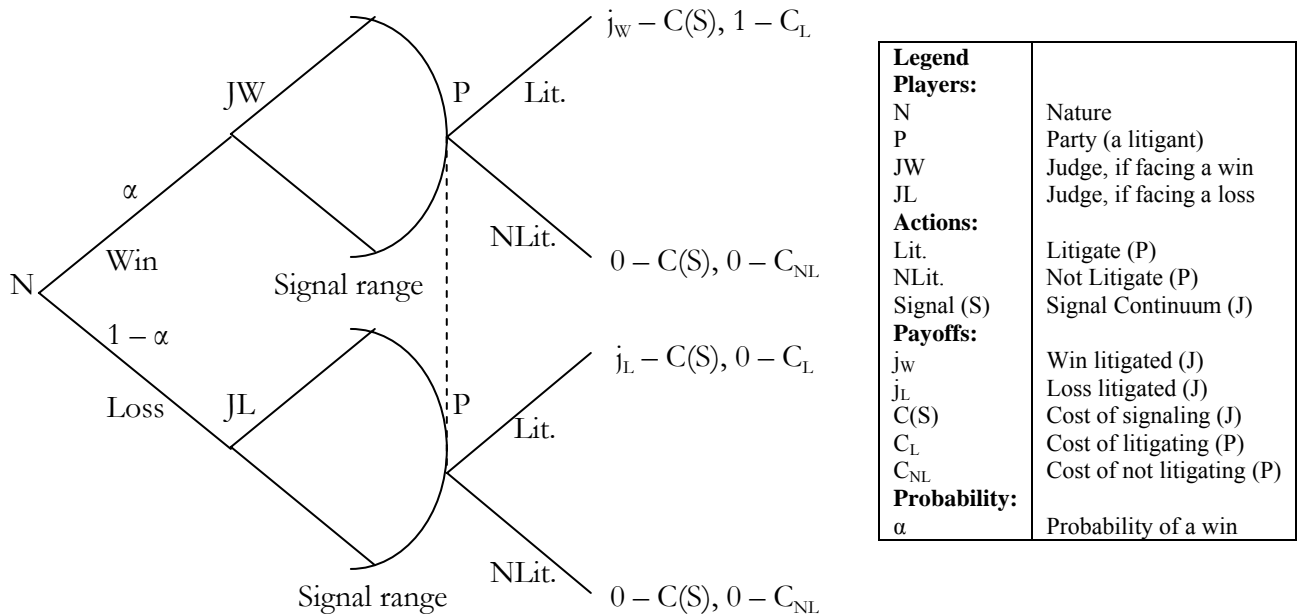
⁵⁴ Kevin T. McGuire and Gregory A. Caldeira, *Lawyers, Organized Interests, and the Law of Obscenity: Agenda Setting in the Supreme Court*, 87 AMER. POLI. SCI. REV. 717, at 718 (1993). Vanessa Baird, *The Effect of Politically Salient Decisions on the U.S. Supreme Court's Agenda*, J. OF POLITICS (forthcoming).

A counter-argument is that litigants may not be able to interpret such signals, however Nelson, *supra* note 36, at 751, showed that consumers of signaling information do not need to assess the information intelligently for signaling to be effective. Also, litigants usually have advocates, who are experts and so can be expected to interpret judicial signals on litigants' behalves.

However, the benefits and costs that determine each judge's utility from signaling will depend on what each other judge is signaling. Thus the signaling level will depend on the beliefs and actions of each judge and each party, in equilibrium. The results show when there is an incentive for judges to send accurate signals, to send misleading signals, and when it is possible to see contradictory signals from different judges.

Play: The outcome of a given case can be represented as being determined by nature, reflecting the fact that litigants do not know the outcome of cases before they decide to pursue litigation. Even though the Judge votes on the outcome of the case, the draw by nature can be seen as occurring after the Judge has formed a definite opinion on the issue.

Figure 1: The Judicial Signaling Game



The game is modeled with the signaling Judge as one of two types: a winning type (JW), who faces a case in which the side they and the litigant support will win, or a losing type (JL), whose preferred side will lose. JW gains utility from the case being heard and won by the side he or she supports (j_w); JL gains utility from the case being heard and lost (j_L). The Judge faces a signaling choice on anticipation of how his or her colleagues

will vote, based on the private information each judge has by virtue of his or her position.⁵⁵

A potential litigating Party (P) does not know whether their case will win or lose, but has an ex ante belief of the underlying probability of the case succeeding: α = the independent probability of a Win; $1 - \alpha$ = the independent probability of a Loss. The Party can update its expectation of success based on the signal it receives from the Judge. Thus the Party is a Bayesian updater.

Although the Judge may know the distribution of all the potential parties' ex ante probabilities of litigating, it is unrealistic to assume that the Judge knows every individual Party's ex ante probability of litigating, i.e. each Party's individual costs and benefits of litigating. The orthodox assumption in signaling games is that the more informed party, the Judge, has perfect knowledge of the Party's ex ante probability of litigating, even when there are multiple potential parties. Consequently, the Judge can perfectly anticipate how the Party will act in each game. The perfect knowledge assumption drastically curtails the possible outcomes; unique equilibria result, but this outcome is

⁵⁵ For courts with random distribution of judges, the model still applies but the signals will be discounted in proportion to the probability that the signaling judge will appear on the relevant bench. For inferior courts, a major issue regarding agendas is the potential for forum shopping. While this model may apply to forum shopping, particularly if courts are in competition with one another over certain issues, forum shopping is not the focus of this article. In the Federal courts, parties have an automatic right of appeal. This need not undermine the signaling process. A party may be uncertain whether to expend the resources in pursuing their appeal, and thus rely on signals from judges as to their amenability to the party's case. Also, advocates may use judicial signals to determine whether they are best off expending their resources in judicial or other forms of issue development, to choose the best timing for a case, or to determine the best vehicle for advocating their chosen issue.

based on artificially restrictive parameters. To combat this limitation, this article's model relaxes one assumption of common knowledge: while the judge is also a Bayesian updater, his or her information is updated probabilistically. This has the dual advantages of making the game more realistic and the assumptions less restrictive.

An example illustrates the order of the play of the game: in the death penalty series of cases, while writing the majority opinion in the retarded defendant case,⁵⁶ Justice Stevens sent a signal encouraging litigants to bring a juvenile defendant death penalty case. Subsequently, such litigation was brought⁵⁷ but failed despite the encouraging signal from the majority. Only two years later did a majority form for Stevens' position.

Payoffs:

Party: The last move is made by the Party. The Party has the choice of litigating (lit) or not litigating (NL). If the Party litigates, a win has positive utility, the value of which is normalized at utility = 1, a loss at utility = 0; either way, this is reduced by the cost of litigating (C_L), which represents attorney charges, court fees etc. If the Party chooses not to litigate, there are no legal costs, but the Party bears the cost of not pursuing their legal case (C_{NL}); for example this could be the Party's cost of bearing its own damages.

Thus the Party's payoffs are:

$$U_P = \begin{cases} 1 - C_L & \text{if litigate and win} \\ 0 - C_L & \text{if litigate and lose} \\ 0 - C_{NL} & \text{if not litigate} \end{cases}$$

(where $1 - C_L > 0 > -C_{NL} > -C_L$)

⁵⁶ *Atkins v. Virginia*, 536 US 304, at 309 n. 6 (2002).

⁵⁷ *Patterson v. Texas*, 123 S. Ct. 24, at 24 (2002) and *Hain v. Mullin*, 123 S. Ct. 993 (2003).

Judge: After Nature moves, the Judge observes the inevitable outcome of the case if it is brought. The Judge gains positive utility from both a winning case being litigated (j_W) and losing case being litigated (j_L), although more from a winning case ($j_W > j_L$). The Judge gains nothing if the case is not litigated. The Judge incurs a cost of signaling (C_S), the extent of which is determined by the level of directness of signal and whether the Judge sends an accurate or misleading signal (discussed below).

Thus the Judge's payoffs are:

$$U_J = \begin{cases} j_W - C_S(\cdot) & \text{if litigated and wins} \\ j_L - C_S(\cdot) & \text{if litigated and loses} \\ 0 - C_S(\cdot) & \text{if not litigated} \end{cases}$$

(where $j_W > j_L > 0$)⁵⁸

Signaling Costs: The Judge has a continuum of signaling options, including sending no signal. Knowing whether the case is a winner or a loser, the Judge makes two decisions within the one action: the judge decides whether to send an accurate or misleading signal; and the judge decides how direct to make the signal. Both choices affect cost as both are tied to judicial reputation.⁵⁹ Firstly, the signaling Judge bears the cost of signaling, increasing with the level of directness of signaling activity: this cost encompasses such factors as the forum in which the signal is given, including the size and type of the audience; and how overt the signal is. This cost is due to judicial reputation resting on

⁵⁸ Both j_W and j_L are positive, as we are looking at the cases where the judge wants to hear the case regardless of its outcome. As such, by the definition of the game, both values are exogenous and provide positive utility to the judge.

⁵⁹ Signaling costs can arise through other mechanisms, such as checking and fining by the uninformed party. See Austen-Smith and Wright, *supra* note 39, at 229-257.

lack of prejudgment: any signals of intent regarding future cases are costly to this aspect of reputation. Secondly, the Judge bears an additional cost for signaling falsely. In the judicial arena, even though signaling is costly for both types of judges, judges who repeatedly signal falsely will develop a reputation of unreliability, or worse, dishonesty; consequently, while a judge with a losing case can signal a winning case, the cost of doing so is higher than for a judge who actually has a winning case. Judges choose whether to send a misleading or accurate signal, and how direct to make the signal; consequently costs are endogenous.

Choice of Actions:

Party: given the signal observed, the expected utilities to the Party of litigating and not litigating are:

$$\begin{aligned} EU_P(\text{Lit}|S_W) &= \Pr(W|S_W) - C_L \\ EU_P(\text{Lit}|S_L) &= \Pr(W|S_L) - C_L \\ EU_P(\text{NL}) &= -C_{NL} \end{aligned}$$

The Party weighs the costs and benefits of litigating and not litigating, given the signal the Party has seen. The Party's utility of litigating is and product of its updated expectation of whether it has a winning case, based on any signal it has seen, discounted by the cost of litigating, and this is weighed against its costs of not litigating.

Judge: given the Judge's Bayesian expectations of whether the Party will litigate, the expected utilities of the Judge of signaling at some level $S=S^*$ in each state of nature are:

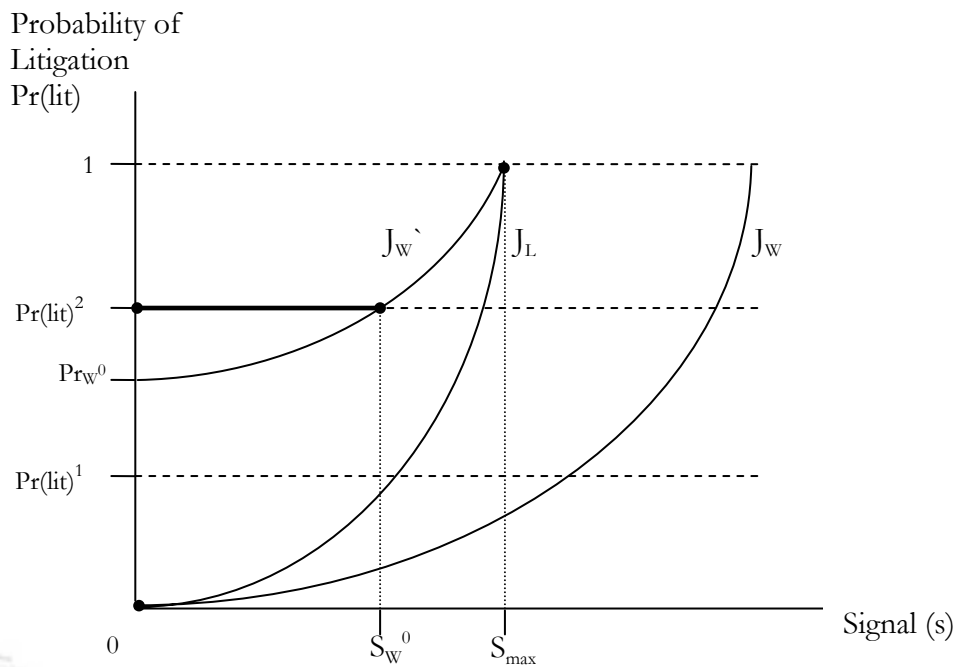
$$\begin{aligned} EU_J(S^*, JW) &= j_W \cdot \Pr(\text{Lit.}|S^*) - C(S^*) \\ EU_J(S^*, JL) &= j_L \cdot \Pr(\text{Lit.}|S^*) - C(S^*) \end{aligned}$$



That is, each type of judge's expected utility is the sum of the expected utility from the case being litigated and the expected utility when the case is not litigated. The former component equates to the utility of hearing the case minus the cost of the signal, multiplied by the Party's probability of litigating, which is contingent on the signal. For the latter component, there is no positive utility gained, only the cost of the signal multiplied by the Party's probability of not litigating, contingent on the signal. Thus the cost is fixed, and the benefit is contingent on the Party litigating.

Equilibrium Concept: As this is a signaling game, the equilibrium concept used is Perfect Bayesian Equilibrium (PBE). This requires that players' actions are best responses, beliefs are consistent with actions and vice versa, and that players Bayesian update where possible.

Figure 2: Probability of Litigation, Judicial Preferences and Perfect Bayesian Equilibria as a Product of Signaling Cost



The relationship between expected judicial utility and a continuum of signaling options in the information market is represented in Figure 2. The proofs stand independent of this figure, but it is illustrative of the relevant signaling and probability levels that determine the equilibria.

Figure 2 represents the Party's probability of litigation ($\text{Pr}(\text{lit})$) as a product of the Judge's signaling level (S) for each type of judge. Thus the x-axis represents the Judge's strategic choice and the y-axis represents the Judge's expectation of the Party's strategic choice. This enables the possible equilibria to be graphed; the separating equilibrium is represented by two single dots; the pooling equilibria are represented by the solid black line bounded by two dots (discussed in detail below).

Figure 2 also represents the preferences of each type of judge. These preferences are represented by indifference curves, in which points above and to the left are favored to points below and to the right. Each judge is indifferent to all points along each of their own indifference curves, labeled J_W , J_W' and J_L . J_W' is concentric to J_W , representing higher utility. J_L is J_L 's indifference curve that runs through the origin; it reaches $\text{Pr}(\text{lit}) = 1$ at signaling level S_{\max} . This point S_{\max} is significant, as it will be shown that this is the maximum level of signaling that will be seen.

Both types of judges' indifference curves are monotonic: the expected probability of litigation is always increasing with greater signaling. Thus the Judge's indifference curves are probably convex: more explicit signaling is less likely to be cheap talk.⁶⁰ J_W has a less steep indifference curve than J_L , which captures the difference in their

⁶⁰ In Figure 2, the relationship is graphed as convex, but it could be any monotonic shape, and could even be rescaled as linear; the important element is monotonicity.

marginal benefits ($j_L < j_W$): for the same increase in the probability of litigation, JW can afford more costly signals than JL can. The single crossing property holds.

Judicial utility is a product of the probability of litigation and the benefits to the Judge, conditional on the outcome of the case, minus the cost of signaling. With no signaling, each type of Judge's utility is the respective utility each would receive if the case is litigated, multiplied by $\text{Pr}(\text{lit})^*$, the ex ante probability of litigation.

$\text{Pr}(\text{lit})^*$ is the ex ante probability that the Party will litigate with no meaningful information as to the type of the Judge. This is exogenous and so can be any level, but the level determines which equilibria exist. Consequently, Figure 2 graphs two possible $\text{Pr}(\text{lit})^*$ s, $\text{Pr}(\text{lit})^1$ and $\text{Pr}(\text{lit})^2$. $\text{Pr}(\text{lit})^1$ lies below the point Pr_W^0 , $\text{Pr}(\text{lit})^2$ lies above. Pr_W^0 is the requisite ex ante probability of litigation the Party must possess for the winning type of judge to be indifferent between signaling at level S_{\max} and not signaling. It is proved below that the relationship between $\text{Pr}(\text{lit})^*$ and Pr_W^0 determines whether some of the equilibria exists.

Below, four hypotheses are made and proved, which together fully describe all of the possible Perfect Bayesian Equilibria (PBE). Hypothesis 1 is that a separating equilibrium exists with the losing type signaling at $(0,0)$ and the winning type signaling at $(S_{\max}, 1)$; this is not contingent on the position of $\text{Pr}(\text{lit})^*$. This result means that there is always an equilibrium outcome where litigants can differentiate between judges with the winning cases and judges facing losing cases. Hypothesis 2 is that a pooling chattering equilibrium exists, with neither party signaling. Hypothesis 3 is that the position of $\text{Pr}(\text{lit})^*$ relative to Pr_W^0 determines whether pooling equilibria exists: if $\text{Pr}(\text{lit})^* < \text{Pr}_W^0$, no pooling equilibria exist. Practically, this means that the prior probability that the Party

will litigate in the absence of any signal determines whether signals reveal whether the case is a winner or a loser. Hypothesis 4 is that if $\Pr(\text{lit})^* \geq \Pr_W^0$, a range of pooling equilibria exist between $(0, \Pr(\text{lit})^2)$ and $(S_W^0, \Pr(\text{lit})^2)$, where S_W^0 is the maximum level of signaling the winning type of judge will tolerate if the probability of litigating remains at $\Pr(\text{lit})^2$. That is, if the ex ante probability of litigating is adequately high, a range of equilibria exist in which it is impossible to tell honest judges from dishonest judges.

Together, these four hypotheses describe all the possible equilibria. In summary, there can exist both pooling and separating equilibria. With pooling levels of signaling, as signaling increases the probability of litigation stays constant at $\Pr(\text{lit})^*$, but the expected judicial utility decreases because of the increasing cost of the signal. The highest level of signaling that will be seen is S_{\max} . This is because even when $\Pr(\text{lit}) = 1$, if $S=S_{\max}$, $EU(J_L) = J_L - C(S_{\max}) = 0$; i.e. the costs of signaling equals the benefits J_L gains from the litigation being heard. At S_{\max} , J_W 's utility jumps to $j_W - C(S_{\max})$, because $\Pr(\text{lit}) = 1$; the Party litigates because it knows that only the winning judge can afford to signal, and so the signal proves the case will win. Since $EU_J(S=0, L) = EU_J(S=S_{\max}, L) = 0$, by standard assumption, J_L will choose $S=0$ over $S=S_{\max}$.⁶¹ As Figure 2 shows, $EU(S_{\max}, W) > 0$; it is still worthwhile for the winning judge to signal at this level.

The litigant is unwilling to litigate at all if he or she believes the judge is a losing type. As such, if a separating equilibrium exists, the requisite signaling level at which the party can be certain of distinguishing between the types must be S_{\max} , because this is the point

⁶¹ This is standard practice, because J_W can tolerate $S_{\max} + \epsilon$ (where ϵ = the smallest possible increment increase), whereas J_L cannot, so the equilibrium concept dictates that J_L will choose $S=0$ when indifferent.

at which it is no longer profitable for the losing type of judge to signal so as to be inseparable from the winning type. This leads to the first hypotheses: a separating equilibrium exists with the losing type of judge (JL) signaling at point (0, 0) and the winning type of judge (JW) signaling at $(S_{\max}, 1)$.

Hypothesis 1: A unique separating PBE exists with JL signaling at (0,0) and JW signaling at $(S_{\max}, 1)$, for any $\Pr(\text{lit})^*$.

The proof of Hypothesis 1 has two parts which are in Appendix 1. In words, the first part of this proof shows that if the Party believes that any signal below S_{\max} indicates a losing case, then JL's utility is maximized by not signaling, and JW's utility is maximized by signaling at S_{\max} . This confirms the Party's beliefs, and so JL not signaling and JW signaling at S_{\max} is a Perfect Bayesian Equilibrium. The second part of the proof shows that no other separating equilibrium exists: if any signal less than S_{\max} would convince the Party that the signal emanated from a Judge with majority support, both type of judges would signal at that level, as both could afford to do so. In that case, the Party's initial beliefs are unsustainable and so any other separating equilibrium fails.

The effect of establishing hypothesis 1 is that one equilibrium outcome that always exists is for the two types of judges to be differentiable by the Party. Consequently, in this equilibrium, judges facing a winning case will signal, but judges facing a losing case will not signal and mislead litigants regarding their chances of success. Additionally, contradictory signals will not be observed, because only JW can afford to signal at a level that will be credible enough to convince a Party to litigate. Signaling will be observed at level S_{\max} and parties will recognize that signal as being sent by JW and know they can rely on it.

Hypothesis 2: A pooling PBE exists with both JW and JL signaling at (0,0), for any $\Pr(\text{lit})^*$.

The proof for Hypothesis 2 is in Appendix 2. It shows that if the Party believes that signaling any signal could emanate from either type of judge, then both JL and JW maximize their utility by not signaling, because the Party will litigate with the ex ante probability $\Pr(\text{lit})^*$, regardless of what signal is sent. This is because signaling is costly, and in this case it has no effect, so judicial utility is maximized by not signaling. This reinforces the Party's ex ante beliefs when zero signaling is observed. The observance of any other level of signaling is off the equilibrium path, and as such not defined by the equilibrium.

So signaling (0,0) is a perfect Bayesian pooling equilibrium, however it is a “chattering equilibrium,” and has minimal significance. It shows that signaling can have no effect, but only when the Party has pre-existing beliefs that signaling is meaningless. It tells us nothing of how the Party will react to signaling, as the observance of any signaling is off the equilibrium path.

Hypothesis 3: If $\Pr(\text{lit})^* \leq \Pr_w^0$, no other PBE exists.

The proof of Hypothesis 3 has two parts and appears in Appendix 3. The first part of this proof shows that if the Party believes that not signaling reveals the judge as having a losing case, JL will signal at some level S^* greater than zero but less than S_{\max} . But in this case JW can maximize his or her utility by signaling at S_{\max} . Then the party will not believe any signal less than S_{\max} comes from a judge with a winning case, and so will not

litigate unless it sees a signal of at least this level. Since JL cannot afford to signal at this level, no Perfect Bayesian pooling equilibrium exists in this range when $\Pr(\text{lit})^1 \leq \Pr_W^0$.

The second part of the proof establishes that if the Party has alternative beliefs to those above, believing instead that any signal equal to or greater than S^* guarantees a winning case, then the losing judge has the incentive and capacity to deviate from the equilibrium and signal at level S^* . This undermines the Party's beliefs and so no separating PBE exists between the range $(0, \Pr(\text{lit})^*)$ to $(S_{\max}, \Pr(\text{lit})^*)$.

Combining Hypothesis 1 and the two parts of Hypothesis 2, when $\Pr(\text{lit})^* \leq \Pr_W^0$, the only PBEs that exist are a separating equilibrium with JL signaling at $(0,0)$ and JW signaling at $(S_{\max}, 1)$ and a chattering equilibria with both types of judge signaling at $(0,0)$.

What these results show is that as long as the Party's initial probability of litigating, prior to potential signaling, is adequately low, no misleading signals will be observed and no contradictory signals will be sent. This is because with a low ex ante probability of litigation occurring, expending resources on costly signaling is not worthwhile for judges with lower returns on cases – i.e. judges facing losing cases – as the expected judicial utility of the case is discounted by the Party's low likelihood of litigating.

Hypothesis 4: If $\Pr(\text{lit})^* > \Pr_W^0$, pooling PBE exist between $(0,0):(S_W^0, \Pr(\text{lit})^*)$ only.

Note: S_W^0 is the maximum level of signaling at which JW is willing to pool with JL, such that the Party litigates with probability $\Pr(\text{lit})^2$. At $S_W^0 + \epsilon$, JW prefers to signal at S_{\max} and be differentiated from the losing type. S_W^0 is the point which the J_W ' indifference curve running through S_{\max} intersects with the $\Pr(\text{lit})^2$ line.

It has already been shown in the proof of Hypothesis 1 that no separating equilibria exist in the range S_W^0 to S_{max} . Additionally, it has been shown in the proof of Hypothesis 2 that (0,0) is a pooling equilibria; this proof shows that similar analysis holds for anything in the range (0,0) to $(S_W^0, Pr(lit)^*)$. It has two parts and appears in Appendix 4.

The first part of the proof shows that if the Party believes that signaling less than some level S^* reveals a judge as a losing type, but that signaling above this level does not guarantee the judge is a winning type, then both JW and JL will maximize their utility by signaling at exactly level S^* . This is consistent with the Party's initial beliefs, so signaling in the range (0,0) to $(S_W^0, Pr(lit)^*)$ is a range of Perfect Bayesian Pooling Equilibria. This means that, subject to their ex ante beliefs, litigants are unable to differentiate between judges signaling in this range.

It remains to be proved that signaling in the range $(S_W^0, Pr(lit)^*)$ to $(S_{max}, 1)$ does not support any PBE. The second part of the proof shows that if the Party believes any signal above S_{max} guarantees a winner and any signal below S_W^0 is non-determinative, JW's maximum utility is achieved by signaling at S_{max} . This is inconsistent with the Party's beliefs and so the equilibrium fails.

The proof of Hypothesis 4 established that pooling Perfect Bayesian Equilibria exist between 0 and S_W^0 , but not between (S_W^0) and (S_{max}) . This means that signals less than S_W^0 could be misleading signals sent by judges facing losing cases who nevertheless wish to see the issue litigated. It also shows that multiple and contradictory signals could be sent by judges, with one judge suggesting one side has majority support and another judge showing the opposite.

The result is that the Party will not know who to believe, and signals will not motivate the Party to litigate at a higher likelihood than they would have otherwise. Why then will judges signal, given that signaling is costly? Because if the judge does not signal, another judge could send a signal contrary to the silent judge's preferences, and that signal would be credible in the absence of any other information, and the Party will act accordingly. Misleading signaling can become credible in this equilibrium range if not countered by an opposing signal, because it will appear to the Party that the Judge that signals is the only one who can afford to do so, and so will be presumed to be JW. So both types of judge will signal, so as to not appear to be JL by default, even though signaling will not show the Party which type of judge is JW.

Implications:

The first result of note is that the model indicates what the upper bound on the level of signaling is. Signaling will not occur beyond S_{\max} . S_{\max} is the threshold beyond which it is not worthwhile for the losing type to signal; consequently, litigants' beliefs do not rest on an expectation of signaling beyond this point, and so winning types also have no incentive to signal beyond S_{\max} .

The position of S_{\max} is determined by the losing type's indifference curve: S_{\max} is the point at which the J_L indifference curve running through the origin intersects with the $\Pr(\text{lit}) = 1$ line. This yields the first comparative static: the steeper the J_L slope, the lower S_{\max} is. This result is intuitive: the more costly it is to send misleading signals, the easier it is to differentiate between winning and losing judges.

The second result is that when $Pr_W^0 > Pr(lit)^*$, no pooling equilibria exist in which signaling occurs. This has considerable normative implications: if the ex ante probability of litigation is adequately low, losing judges do not have the ability to mislead potential litigants as to their chances of success.

The third result, however, is that when $Pr_W^0 \leq Pr(lit)^*$, a range of pooling equilibria exist, and so the problem of losing judges being able to mislead litigants reappears, with multiple equilibria supported by a range of signaling options.

The relationship that determines whether pooling equilibria other than the chattering equilibria exist depends firstly on the ex ante probability of litigation. This factor is entirely exogenous, and depends on such factors as the resources the potential litigant possesses, and their perceived chances of winning, prior to any signaling. Ironically, high litigation costs, which will lower the ex ante probability of litigation, will therefore protect the litigant from misleading signals. The second factor is the point Pr_W^0 , which is determined by the combination of the position of S_{max} and J_W' , the winning type's indifference curve that runs through S_{max} . The conclusion that the existence of pooling equilibria that involve signaling depend on the ex ante probability of litigation and the point of indifference for the winning type of judge yields two more comparative statics: firstly, the lower S_{max} is, the higher Pr_W^0 is. This in turn makes it less likely that pooling equilibria exist. Combining the first two comparative statics, the more costly misleading signaling is, the less likely any pooling equilibria involving signaling can exist at all.

The third comparative static is that the steeper the winning type's indifference curve is, the lower Pr_W^0 is, and so the more likely pooling equilibria exist. Thus the greater the difference between the winning and losing types' indifference curves, the less able losing

types are to pool with winning types. The difference between the two curves is dependent on the costs and benefits of hearing a winning and losing case, which is exogenous.

The fourth result is that the range of pooling equilibria is bounded by the point S_w^0 , which is determined by the intersection between $Pr(lit)^*$ and J_w' (assuming $Pr(lit)^* \geq Pr_w^0$). This yields the final two comparative statics: the lower the ex ante probability of litigation, the narrower the range of pooling equilibria; and the steeper the winning type's indifference curve, the broader the range of possible pooling equilibria. These two results are variations on the previous results.

The combination of all of the above results has broader implications for recent cases regarding penalties imposed for judicial communications, such as extensive judicial campaigns.⁶² This case struck down ethical restrictions on judicial campaigning conduct as contrary to the First Amendment. The game's results show that, by making sincere signaling more easily achievable without fear of sanction, this ruling could enable sincere judges to more easily differentiate themselves and create separating equilibria. However by lowering the costs of potentially misleading signals, such a ruling could instead make pooling more achievable. Which equilibria will occur will depend on how much the costs of signaling are lowered, but by enabling greater judicial signaling, this game shows that decisions such as *White* also promote the cheap talk of misleading signals.

In response to the *White* case, the ABA is re-examining its regulation of judicial speech.⁶³ However, unless the new regulations factor in the interplay this game has revealed to exist between the cost of signaling and the capacity of judges with majority

⁶² *Republican Party of Minnesota v. White*, 122 S. Ct 2528 (2002).

⁶³ See American Bar Association, ABA Joint Commission to Evaluate the Model Code of Judicial Conduct, <http://www.abanet.org/yld/elibrary/memphis04pdf/ethicscanon.pdf>.

support to differentiate themselves from judges without such support, the new regulations could have unintended consequences.

III.A Proof that Judges Have an Incentive to Mislead Litigants

A final implication of the game warrants further scrutiny. The existence of pooling equilibria indicates that, in some circumstances, litigants are unable to differentiate between judges who face a winning and a losing case. This means that judges can misrepresent the cases before them; of particular importance is the possibility that judges can signal that cases will win when in fact they will lose. The game so far has proved that judges *could* misrepresent losing cases as winners; if the Judge's strategic choice is simplified to choosing between sincere and misleading signaling, it is possible to prove that judges *do* have the incentive to misrepresent cases.

If the costs to the Judge are simply the cost of signaling truthfully, C_T , and the cost of signaling falsely, C_F , and $C_T < C_F$, then the following hypothesis follows.

Hypothesis 5: JL has an incentive to send misleading signals if $j_L > C_F - C_T$

The proof of Hypothesis 5 is in Appendix 5. If P believes J always tells the truth, then a winning signal implies a winning case with probability = 1, and a losing signal guarantees a losing case. As such, the Party's expected utility from litigating when observing a signal of a winner and a signal of a loser is 1 and 0 respectively. The Party will litigate if and only if it sees a winning signal. As such, when the Judge observes a winning case, he or she will always signal a winner. But as long as $j_L > C_F - C_T$, that is, as long as the benefits to JL of sending misleading signals outweigh the difference in costs between signaling accurately his or her lack of majority support and sending

misleading signals, JL has an incentive to send misleading signals, suggesting a winner. The Party's initial beliefs are unsustainable, and so when $j_L > C_F - C_T$, no PBE can exist where judges always truthfully signal.

A table of results of the comprehensive model of the game in which the Judge only chooses between signaling honestly and signaling falsely can be found in Appendix 6. Separating, semi-separating and mixing pooling equilibria exist. A similar model with three strategy choices by the Judge – signaling truthfully, signaling falsely and not signaling – yields similar results.⁶⁴ Hypothesis 5, however, contains the most important result, which is that judges have an incentive to misrepresent a losing case as a winning case as long as the benefits of hearing the case cover the reputational costs of issuing such misleading signals.

Implications:

When judges face cases in which their favored side will lose, they can only be relied upon to consistently signal the truth when the payoffs from hearing the case are sufficiently low. For litigants, this means that foreknowledge that a judge cares strongly about an issue, and not just an outcome, should lead to skepticism of any judicial signal. Litigants can look to cues such as the importance of the doctrine in the area and prior indications of strong feelings of judges on like matters to determine the likelihood of misrepresentation-inducing strength of judicial feeling. This is unfortunate for any judge wishing to shape the court's agenda, as the issues judges consider to be most important will, due to Bayesian updating, also be those which they have least influence over.

⁶⁴ Proofs for either of these games can be obtained from the author.

CONCLUSION

This game explains seemingly incongruous results, such as the 2003 series of death penalty cases: judges signal the future outcome of cases, but sometimes those judges have incentives to exaggerate the chances of success of the position they support. This conceptual explanation is supported by a rigorous model of judicial signaling behavior and the effect it has on litigants' responses. The results of the game provide a framework for understanding and predicting how signaling of judges' private information to potential litigants takes place, and what its effects are.

This behavior has been shown to be systematically explicable, as a number of equilibria have been proved to exist. The comparative statics outlined above explained how and when different signaling behavior manifests itself, in accordance with the beliefs and actions of each player. The existence of a separating equilibrium is a positive normative result, as it suggests that in some circumstances litigants are able to differentiate between cases that will and will not succeed. However the equilibrium only occurs if judges facing winning cases can afford to signal at the level S_{\max} . This condition is by no means guaranteed: institutional limits, be they legal restraints, such as impeachment, or conventional constraints, such as an expectation of judicial circumspection, may render judges unable to signal as overtly as the separating equilibrium condition requires. Consequently, the pooling equilibria may be the only achievable equilibria.

The existence of pooling equilibria indicates that, in some circumstances, litigants are unable to differentiate between judges who face a winning and a losing case. This means that judges can misrepresent the cases before them; in particular, judges signal that

a case will succeed when in fact it will fail. The final hypothesis showed that when judges gain a benefit from a case even when it loses, they have an incentive to misrepresent the prospects of those cases.

This does not necessarily mean that signaling harms the litigant. Signaling literature suggests that even if more informed players have an incentive to misrepresent, as long as the uninformed party is a Bayesian updater, even misleading signals can still convey some information.⁶⁵ Nevertheless, the result that judges send misleading signals to potential litigants fundamentally challenges accepted notions of how judges do and should behave.

The conclusion that cases of particular salience to a judge provide less opportunity for credible signaling returns us to the mystery of Justice Scalia's motivation for his comments in response to the *Newdow* case. If Justice Scalia's position and strength of feeling on the issue were easily anticipated, then he would need to use particularly strong and costly signals to be believed. But S_{\max} may have been more than he could ultimately afford, in terms of conventional restraints on judicial conduct. Justice Scalia's actions illustrate the relationship between the cost of signaling and the effect on credibility of the signal.

But one question remains: if the case was almost certainly going to the Supreme Court, with or without encouragement from Justice Scalia, why did he engage in such costly signaling behavior? Although Justice Scalia's behavior is unambiguously signaling

⁶⁵ Austen-Smith and Wright, *supra* note 39, and Potters and Van Winden, *supra* note 35. Gilligan and Krehbiel, *supra* note 35, even show the information receiver may grant the signaler power to encourage such signaling, even with an incentive to misrepresent, such as restrictive rules on committees.

behavior, it may be a different type of signaling than analyzed herein, that is, signaling by judges to potential litigants. Judges may wish to signal to other audiences, for different reasons. In particular, Justice Scalia in this case, and judges more generally, may wish to signal the future direction of a court to legislative or executive officials, in the hope of influencing their responses to judicial action;⁶⁶ judges may wish to pressure their colleagues to stay with a prior commitment in support of the signaling judge's position; or judges may wish to signal their attitudes on a particular issue to lower courts, beyond or before the bounds of precedent. Analysis of these other forms of signaling is beyond the realm of this article. However, this article has provided a framework for understanding judicial signaling behavior, and its model of judicial signaling can be adapted in future work to account for the subtleties of these different types of signaling.

⁶⁶ See e.g., Linda Greenhouse, *Justices Deny Inmate Appeal in Execution of Juveniles*, NEW YORK TIMES, Jan 28, 2003, who suggests that the Supreme Court's decision to accept appeals from Guantanamo Bay prisoners is sending a signal to the Bush administration that it is "intent on exercising its power to the maximum extent possible" and will not yield to the "imperial presidency."

APPENDICES

APPENDIX 1

Hypothesis 1: A unique separating PBE exists with JL signaling at (0,0) and JW signaling at $(S_{\max}, 1)$, for any $\Pr(\text{lit})^*$.

Lemma 1: A separating PBE exists with JL signaling at (0,0) and JW signaling at $(S_{\max}, 1)$, for any $\Pr(\text{lit})^*$.

Proof:

Let S^* be some S : $0 < S^* < S_{\max}$

If P believes $\Pr(L | S < S_{\max}) = 1$

and $\Pr(W | S \geq S_{\max}) = 1$

Then:

$$EU_J(S=0, L) = 0$$

$$EU_J(S=S^*, L) = 0.J_L - C(S^*) < 0$$

$$EU_J(S=S_{\max}, L) = 1.J_L - C(S_{\max}) < 0$$

then $\Pr(S=0, L) = 1$

And:

$$EU_J(S=0, W) = 0$$

$$EU_J(S=S^*, W) = 0.J_W - C(S^*) < 0$$

$$EU_J(S=S_{\max}, W) = 1.J_W - C(S_{\max}) > 0.$$

then $\Pr(S=S_{\max}, W) = 1$

Then:

$$\Pr(S=S_{\max}, W) = 1$$

$$\text{So } \Pr(W | S_{\max}) = 1$$

$$\text{and } \Pr(\text{lit} | S_{\max}) = 1$$

Lemma 2: No other separating PBE exists.

Proof by Contradiction:

Let S' be some S : $0 < S' < S_{\max} - \epsilon$

If P believes $\Pr(L | S < S_{\max} - \epsilon) = 1$

and $\Pr(W | S \geq S_{\max} - \epsilon) = 1$

Then:

$$EU_J(S=0, L) = 0$$

$$EU_J(S=S', L) = 0 \cdot J_L - C(S' - \epsilon) < 0$$

$$EU_J(S=S_{\max} - \epsilon, L) = 1 \cdot J_L - C(S_{\max} - \epsilon) > 0$$

then $\Pr(S=S_{\max} - \epsilon, L) = 1$

and P will not believe $\Pr(W | S \geq S_{\max} - \epsilon) = 1$

APPENDIX 2

Hypothesis 2: A pooling PBE exists with both JW and JL signaling at (0,0), for any

$\Pr(\text{lit})^*$.

Proof:

Let S^* be some S : $0 < S^*$

If P believes $\Pr(W | S=0) = \alpha$

$$\Pr(W | S > 0) = \alpha$$

Then:

$$EU_J(S=0, L) = J_L \cdot \Pr(\text{lit})^*$$

$$EU_J(S=S^*, L) = J_L \cdot \Pr(\text{lit})^* - C(S^*)$$

So $\Pr(S=0, L) = 1$

And:

$$EU_J(S=0, W) = J_W \cdot \Pr(\text{lit})^*$$

$$EU_J(S=S^*, W) = J_W \cdot \Pr(\text{lit})^* - C(S^*)$$

So $\Pr(S=0, W) = 1$

Then $\Pr(\text{lit} | S=0) = \Pr(\text{lit})^*$

And $\Pr(\text{lit} | S > 0)$ is off the equilibrium path.

APPENDIX 3

Hypothesis 3: If $\Pr(\text{lit})^* \leq \Pr_W^0$, no other PBE exists.

Lemma 3: If $\Pr(\text{lit})^ \leq \Pr_W^0$, no Pooling PBE exist between the range $(0, \Pr(\text{lit})^*)$ to $(S_{\max}, \Pr(\text{lit})^*)$.*

Proof:

Let S^* be some S : $0 < S^* < S_{\max}$

If P believes $\Pr(W|S>0) = \alpha$

And $\Pr(W|S=0) = 0$

Then:

$EU_J(S=0, L) = 0$

$EU_J(S^*>0, L) = J_L \cdot \Pr(\text{lit})^* - C(S^*) > 0$

Then $\Pr(S=0, L) = 0$

And:

$EU_J(S^*>0, W) = J_W \cdot \Pr(\text{lit})^* - C(S^*)$

whereas $EU_J(S_{\max}, W) = 1 \cdot J_W - C(S_{\max})$.

Since $\Pr(\text{lit})^* < 1$ and $C(S^*) < C(S_{\max})$,

Then $EU_J(S=S^*, W) < EU_J(S=S_{\max}, W)$

So $\Pr(S=S_{\max}, W) = 1$

And $\Pr(\text{Lit} | S < S_{\max}) = 0$

Lemma 4: If $\Pr(\text{lit})^ \leq \Pr_W^0$, no separating PBE exist between the range $(0, \Pr(\text{lit})^*)$ to $(S_{\max}, \Pr(\text{lit})^*)$.*

Proof:

Let S^* be some S : $0 < S^* < S_{\max}$

If P believes $\Pr(W|S \geq S^*) = 1$

and $\Pr(W|S < S^*) = 0$

Then $EU_J(S^*, L) = J_L \cdot 1 - C(S^*) > 0$

Then $\Pr(S=S^*, L) = 1$

And so $\Pr(W|S \geq S^*) \neq 1$

APPENDIX 4

Hypothesis 4: If $\Pr(\text{lit})^* > \Pr_W^0$, pooling PBE exist between $(0,0):(S_W^0, \Pr(\text{lit})^*)$ only.

Lemma 5: $(S^*, \Pr(\text{lit})^*)$ is a pooling PBE.

Proof:

Let S^{\sim} and S^{\wedge} be some S 's: $0 < S^{\sim} < S^* < S^{\wedge} < S_{\max}$

If P believes $\Pr(L|S < S^*) = 1$

$$\Pr(W|S \geq S^*) = \alpha$$

Then:

$$EU_J(S=S^{\sim}) = 0 \cdot J_L - C(S^{\sim})$$

$$EU_J(S=S^*) = \Pr(\text{lit})^* \cdot J_L - C(S^*)$$

$$EU_J(S=S^{\wedge}) = \Pr(\text{lit})^* \cdot J_L - C(S^{\wedge}) < \Pr(\text{lit}) \cdot J_L - C(S^*)$$

$$\text{So } \Pr(S=S^*, L) = 1$$

The same analysis holds true for a Judge facing a winning case, once again because

$\Pr(\text{lit})^* > \Pr_W^0$, from which it follows that:

$$EU_J(S_{\max}, W) = J_W \cdot 1 - C(S_{\max}) < J_W \cdot \Pr(\text{lit})^* - C(S^*) = EU_J(S^*, W)$$

Then for P:

$$\Pr(W|S^*) = \alpha$$

$$\text{And } \Pr(\text{Lit}|S^*) = \Pr(\text{lit})^*$$

Lemma 6: $(S_W^0, \Pr(\text{lit})^*)$ to $(S_{\max}, 1)$ is not a pooling PBE:

Proof by Contradiction:

Let S^{\wedge} be some S : $S_W^0 < S^{\wedge} < S_{\max}$

If P believes $\Pr(W|S^{\wedge}) = \alpha$

$$\text{and } \Pr(W|S_{\max}) = 1$$

Then:

$$EU_J(S=S^{\wedge}, W) = \Pr(\text{lit})^* \cdot J_W - C(S^{\wedge})$$

$$EU_J(S=S_{\max}, W) = 1 \cdot J_W - C(S_{\max})$$

Since $EU_J[(S=S_W^0, W)|\Pr(\text{Lit.})=\Pr(\text{Lit.})^*] = EU_J[(S=S_{\max}, W)|\Pr(\text{Lit.})=1]$, by definition of S_W^0

And $EU_J[(S=S_W^0, W)|\Pr(\text{Lit.})=\Pr(\text{lit})^*] > EU_J[(S=S', W)|\Pr(\text{Lit.})=\Pr(\text{lit})^*]$, by proof of Hypothesis 1,

Then $EU_J(S=S_{\max}, W) > EU_J(S=S', W)$

So $\Pr(S=S_{\max}) = 1$

So $\Pr(W|S=S') = 0$

And the Party's beliefs are unsustainable.

APPENDIX 5

Hypothesis 5: JL have an incentive to send misleading signals if $j_L > C_F - C_T$

Proof by Contradiction:

If P believes $\Pr(W|S_W) = 1$

And $\Pr(W|S_L) = 0$

Then by Bayes' Rule: $EU_P(\text{Lit.}|S_W) = [\Pr(S_W|W) \cdot \Pr(W)]/\Pr(S_W) = (1 \cdot \alpha)/\alpha = 1$

And $EU_P(\text{Lit.}|S_L) = 0$

Then:

$EU_J(S_W, W) = j_W - C_T$

$EU_J(S_L, W) = -C_T$

And:

$EU_J(S_W, L) = j_L - C_F$

$EU_J(S_L, L) = -C_T$

So if $j_L > C_T - C_F$,

then $\Pr(S_W|L) = 1$

And $\Pr(W|S_W) \neq 1$

APPENDIX 6

Table 1: Summary of Equilibrium Conditions with Discrete Judicial Choices

Equilibrium J Action	Equilibrium Type	Equilibrium P Response	Conditions
1.a always signal honestly	Separating	$\text{pr}(\text{Lit} \text{W}) = 1$ $\text{pr}(\text{Lit} \text{L}) = 0$	$j_L \leq C_F - C_T$
1.b always signal falsely	Separating	No Equilibrium	
2.a always signal a winner	Pooling	$\text{Pr}(\text{lit}) = 0$	$\alpha < C_L - C_{NL}$
2.b always signal a loser	Pooling	$\text{Pr}(\text{lit}) = 0$	$\alpha < C_L - C_{NL}$
3.a always signal a winner if observe a winner; mix if observe a loser	Semi-Separating where S_L is fully revealing	$\text{pr}(\text{Lit.} \text{S}_W) = 1$ $\text{pr}(\text{Lit.} \text{S}_L) = 0$	$j_L = C_F - C_N$
3.b always signal a loser if observe a loser; mix if observe a winner	Semi-Separating where S_W is fully revealing	No Equilibrium	
4. mix if observe a winner and mix if observe a loser	Pooling	$\text{pr}(\text{Lit.} \text{S}_W) = 1$ if $\text{pr}(\text{S}_W \text{L}) / \text{pr}(\text{S}_W \text{W}) \leq$ $[\alpha/(1-\alpha)] \cdot (1/(C_L - C_{NL}) - 1)$; 0 otherwise	$j_W + j_L = C_T + C_F - 2C_N$ $\text{pr}(\text{S}_W \text{L}) / \text{pr}(\text{S}_W \text{W}) =$ $[\alpha/(1-\alpha)](1/(C_L - C_{NL}) - 1)$