# Judges, Creative Lawyers, and Legal Innovation

Sepehr Shahshahani Deborah Beim

February 28, 2024

**Abstract**

Economists and political scientists have made great strides in modeling legal doctrine, but existing models have little to say about the art of lawyering because they take a case's legal frame as given. In fact, however, advocates make important strategic decisions about the legal theory of a case. We present a formal model that considers a lawyer's decision about how to frame or theorize a case and relates such lawyerly innovation to judicial ideology and aptitude, where aptitude is conceptualized as a judge's ability to adjudicate innovative legal arguments. One important result is that lawyers will not innovate when judicial aptitude falls below a certain threshold. Another important result is that judicial aptitude matters more than judicial ideology in fostering lawyer-initiated legal innovation. Specifically, for any non-degenerate distribution of judicial ideology (no matter how hostile), there exists a level of aptitude sufficiently high to guarantee that lawyer-initiated legal innovation will take place with positive probability. The converse, however, is not true: It is not true that, for any non-degenerate distribution of judicial aptitude (no matter how low), there exists some level of ideological receptivity high enough to guarantee the survival of lawyer-instigated doctrinal innovation. In addition to shedding light on the circumstances fostering or enfeebling legal innovation, our results have important implications for empirical estimation of judicial ideology, showing that measures that purport to transcend jurisdictional or temporal boundaries are prone to error. In extensions, we are exploring the conditions under which creative lawyering does or does not advance a client's interest, a question with important implications about the ethics and strategy of impact litigation.

# 1 Introduction

Economists and political scientists have made great strides in modeling legal doctrine, but existing models have little to say about the art of lawyering because they take a case's legal frame as given. In these models, a case comes prepackaged, say, as a tort case or a property case, a case about an improper police search or about the constitutionality of a criminal statute. But in fact the legal frame is not naturally predetermined; lawyers make strategic decisions about the legal theory of a case, with important consequences for their client and for the development of law. Consider the following examples.

*Lawrence v. Texas*, 539 U.S. 558 (2003), the landmark case holding that Texas's criminal ban on certain same-sex sexual conduct is unconstitutional, did not have to be a constitutional case of that kind. The defendant could have challenged the legality of the police's entry into his home—a challenge that, if resolved in his favor, would have obviated the constitutional question. But he chose not to challenge the police entry (see *id.* at 563), a fateful strategic decision that ended up changing the course of the law.

The same sort of strategic lawyering occurred in *Bowers v. Hardwick*, 478 U.S. 186 (1986), the most significant pre-*Lawrence* precedent on same-sex sexual conduct, which reached the opposite conclusion as *Lawrence*. In that case, the defendant Michael Hardwick was faced with a choice: (1) quietly plead guilty to the charges and receive a light sentence, (2) contest the police's entry into his home, a strong argument given the facts of the case, or (3) bring a constitutional challenge to the state anti-sodomy law under which he was charged. After consulting with the ACLU, which had sought him out as a sympathetic plaintiff to challenge laws which it viewed as a "bedrock of legal discrimination against gay men and lesbians," Hardwick decided to go with the third option despite its greater risk (see Irons (1988); Murdoch and Price (2001); Eskridge (2008)).

Similar strategic choices were at play in other landmark cases, like *United States v. Windsor*, 570 U.S. 744 (2013), striking down as unconstitutional the provision of the Defense of Marriage Act that denied federal recognition to same-sex marriages, and *District of Columbia v. Heller*, 554 U.S. 570 (2008), holding that the Second Amendment protects individual rights to possess and to use a firearm for purposes unconnected with service in a militia and that certain D.C. gun laws violated these rights. And in less famous cases too, like *Tilikum ex rel. People for the Ethical Treatment of Animals, Inc. v. Sea World Parks & Ent., Inc.*, 842 F. Supp. 2d 1259 (S.D. Cal. 2012), a lawsuit brought by PETA as next friend of five captured wild orcas arguing that the orcas' captivity violated the Thirteenth Amendment prohibition of slavery and involuntary servitude, and *Juliana v. United States*, 217 F. Supp. 3d 1224 (D. Or. 2016), *rev'd and remanded*, 947 F.3d 1159 (9th Cir. 2020), a lawsuit claiming a constitutional right to a "climate system capable of sustaining human life."

A common feature of these cases, as stated, is that a party (with its lawyer) faces a strategic decision about how to frame and argue its case. Another common feature is that the choice is between a conventional theory and an innovative or pathbreaking one—for example, in *Bowers* and *Lawrence*, a choice between challenging the legality of the police search and challenging the constitutionality of the statute. Often, the conventional theory is associated with a relatively low-reward win but also a safer loss, while the innovative theory is associated with a potentially big win but also a costlier loss. In other words, the magnitude of both the downside and the upside is higher for the innovative theory than the conventional one. For example, in *Bowers* and *Lawrence*, the argument that the statute is unconstitutional could lead to dramatic gains for the defendant and other gay people if successful but would establish damaging precedent if unsuccessful and would certainly do the defendant no favors at sentencing either.[1]

Inspired by these cases and their like, we present a formal model that considers a lawyer's decision about how to frame a case and relates this decision to judicial

[1] Under modern American procedure, a litigant is not forced to pick a *single* claim or defense and so, in principle, can assert *both* conventional and innovative theories (see Fed. R. Civ. P. 8(d)). This, however, does not change the qualitative tradeoff or the formal analysis to come. Bringing both theories is still high-risk, high-reward relative to bringing only the conventional theory as long as there is a nonzero chance that the court will rule on the innovative theory. So, in cases where bringing both theories is a practical possibility, readers can interpret the choice of asserting the creative theory as a choice of asserting both theories.

ideology and aptitude. By judicial ideology we mean a judge's prior attitude or bias against the party, and by aptitude we mean a judge's ability to adjudicate innovative legal arguments. We seek to understand how the composition of courts with respect to these judicial characteristics affects doctrinal innovation instigated by lawyers.

One important result is that lawyer-initiated doctrinal innovation will not take place below a population threshold of judicial aptitude. This result relates to qualitative and quantitative empirical literature about the selection of creative or intellectual types into the legal profession in common law countries (e.g., Hadfield (2008)).

Another important result is that judicial aptitude matters more than judicial ideology in fostering lawyer-initiated legal innovation. Specifically, for any given distribution of judicial ideology (no matter how hostile), there exists a level of aptitude sufficiently high to guarantee that lawyer-initiated legal innovation will take place with positive probability. The converse, however, is not true: It is not true that, for any distribution of judicial creativity (no matter how low), there exists some level of ideological receptivity high enough to guarantee the survival of lawyer-instigated doctrinal innovation.

In addition to shedding light on the circumstances fostering or enfeebling legal innovation, our results have important implications for empirical estimation of judicial ideology. Because, as we show, lawyers' decisions about how much to push the bounds of existing doctrine depend on their expectations about judicial ideology, measures of judicial ideology that purport to transcend jurisdictional or temporal boundaries are prone to error. Similar selection effects complicate empirical efforts to estimate whether legal arguments are conventional or boundary-pushing based on their success rate.

In extensions, we are exploring the conditions under which creative lawyering does or does not advance a client's interest. The potential tension between the outcome of a given case and the general development of law raises important questions about the ethics and strategy of movement lawyers and impact litigation.

# 2 Related Literature

This section is under construction. It reviews the formal-theoretical literature on judicial decisionmaking, lawyers, and legal innovation. The main point to be made is that the literature is rich but has not really investigated a litigant's choice of how to frame a case.

Literature on strategic interaction in the judicial hierarchy: Cameron, Segal and Songer (2000); Lax (2003); Carrubba and Clark (2012); Beim, Hirsch and Kastellec (2014); Hübert (2019); Shahshahani (2021); Parameswaran, Cameron and Kornhauser (2021).

Literature on lawmaking and the evolution of law: Kornhauser (1992); Gennaioli and Shleifer (2007); Baker and Mezzetti (2012); Lax (2012); Fox and Vanberg (2014); Beim (2017); Parameswaran (2018); Shahshahani (2022).

Literature on legal innovation: Baker and Biglaiser (2014); Shadmehr, Shahshahani and Cameron (2022).

# 3 Model

## 3.1 Setup

**One-Shot Game.** There are three players, a party ($P$) with a case, the party's lawyer ($A$, for advocate), and a judge ($J$). The party is not separately modeled as a strategic actor—the lawyer acts for him, but as we shall see their interests may diverge in the long term. There is a state of the world ($\omega$) which may be favorable ($f$) or unfavorable ($u$) to the party. The game proceeds as follows:

1. Nature sends a signal ($s$) indicating whether the state of the world is favorable to the party ($s \in \{f, u\}$). We assume that $\Pr(s = f|\omega = f) = \Pr(s = u|\omega = u) \equiv p > 1/2$, which roughly speaking means that the signal is more accurate than not in a symmetric way. And we assume that $p$ is distributed over $[1/2, 1]$ according to the CDF $F$ and associated PDF $f$. Both $s$ and $p$ are common knowledge. When $s = f$, we refer to $p$ as the strength

of the party's case.

2. The lawyer chooses whether to bring the case under a conventional theory or an innovative theory, represented by $t \in \{c, i\}$. Lawyers are of two types—conventional and innovative. Conventional lawyers can only bring a conventional case; innovative lawyers can formulate either a conventional or an innovative case.

3. The judge decides to rule favorably or unfavorably to the party, $r \in \{f, u\}$.

**Payoffs.** The party's payoff, which for the stage game is not differentiated from the lawyer's payoff, depends on the theory and whether the party wins or loses. The four possible outcomes are $L_c$, $W_c$, $L_i$, $W_i$, where the capital letter represents win or loss and the subscript represents the theory. These payoffs have the relationship $L_i < L_c < W_c < W_i$, which captures the idea that the more innovative theory has higher upside and lower downside (high risk, high reward). The judge's payoff incorporates three components: (1) a desire to get it right (i.e., to have her ruling match the state of the world, or $r = \omega$), (2) bias against the party, represented for each judge $j$ by a prior belief that the state of the world is favorable to the party, $\pi_j \in (0, 1/2]$ (so increasing $\pi_j$ represents decreasing bias, with $\pi_j = 1/2$ representing a perfectly unbiased judge),[2] and (3) a cost of effort, $c_j$, which is realized if and only if the judge rules in favor of the party on the innovative theory. The last component captures the idea that the innovative theory pushes the boundaries of law and accepting it therefore involves more work than routine judging. More creative or capable judges have a lower cost of effort. Thus, the judge's payoff is represented by

$$U_j = v_j - c_j \mathbb{1}\{t = i \quad \text{and} \quad r = f\} \tag{1}$$

where $v_j$ is the judge's payoff from getting it right. Normalizing the payoff from getting it right to 1 and the payoff from getting it wrong to 0, we can write

[2] We could model judges with favorable as well as unfavorable bias (i.e., $\pi_j \in [0, 1]$ rather than $\pi_j \leq 1/2$), but the favorable-bias case would be symmetric.

$v_j = \Pr(r = w)$. We assume that

$$\text{Assumption 1: } \exists\ j \text{ such that } c_j < 1$$

which is to say that not all judges have such a high cost of effort that they would rule against the innovative theory even if they would be certain that it is right.

**Repeated Game.** In the repeated game the one-shot game is repeated until the judge rules on the innovative theory (i.e., the period when $t = i$ is the last period). Thereafter, the last stage's (discounted) payoff accrues indefinitely into the future. The client (or the cause) has discount factor $\delta$ but lawyers are short-lived, meaning their payoff is the payoff for the period for which they are retained. There are different ways of thinking about what the proper quantity is for the payoff to the cause. The most straightforward conceptualization is to say that the cause is indifferent as between winning or losing on the conventional theory ($L_c = W_c = 0$) and is concerned only with the innovative theory. This captures the idea that the cause is advanced only by making favorable new law. In a more complicated version of the dynamic model the distribution of $\pi_j$ could change overtime, representing changing social mores or changing composition of the judiciary, but in this draft we keep the distribution of $\pi_j$ (and $c_j$) constant over time.

**Information structure.** An important modeling choice we need to make is to what extent the lawyer knows $\pi_j$ and $c_j$ before bringing the case. In a simple version of the model $\pi_j$ and $c_j$ are fully known in advance; in a more complicated version judges have discrete types depending on bias and capability and the lawyer knows the proportion of types in advance. We will solve the full-information version first and then proceed to the more complicated setup.

## 3.2 Interpretation

The party can be either a plaintiff or a defendant. The high-risk, high-reward feature of the innovative theory fits both defensive (i.e., defendant-side) and offensive (plaintiff-side) theories. For example, of the cases discussed in the Introduction, *Lawrence* and *Bowers* involved a defendant's choice of theory whereas *Windsor*, *Heller*, *PETA*, and *Juliana* involved a plaintiff's choice.

One interpretation of the high-risk, high-reward structure is that presenting the innovative theory will entail a victory or defeat *on the law* on an issue where the law is unsettled whereas the conventional theory entails only a win or loss *in this case*. One can challenge this interpretation by objecting to $p$ being a signal of case strength under *both* theories. Fair enough, but two responses: First, certain elements of the strength of a case transcend the particular theory. This is true especially of "extra-legal" factors such as whether the party is sympathetic. Moreover, different claims or defenses often have elements in common. Second, and more generally, we could solve the model with $p_1$ and $p_2$, but that would seem to make it messier without much gain in insight.

The decision not to differentiate party and lawyer payoffs at the stage game assumes away obvious conflicts of interest. This stylized assumption is appropriate given our focus.[3] Note though that lawyer and client payoffs may differ in the repeated game.

The three components of the judge's payoff function nicely capture both the legalistic element often stressed by lawyers and the bias/ideology element often stressed by political scientists, as well a capability/creativity component that is important in practice but to our knowledge rarely incorporated in formal models of judging.

Another question is why the lawyer cannot simply drop the case. The model implicitly assumes that arguing *some* theory is incentive compatible. This assumption is easy to defend if the alternative option is conceived as showing up in court without any legal argument. But one might object that adding the option of not bringing the case (for the plaintiff) or settling (for the defendant or plaintiff) could make bringing very weak cases incentive-incompatible. We chose to abstract away from the decision whether to litigate because our focus is on understanding

[3] Of course, the lawyer's payoff need not be exactly the same as the party's payoff to preserve the meaning of this assumption; it could be an increasing function of the party's payoff. But, to avoid extra notation, we decided to use the same quantities for the lawyer's payoff (e.g., $L_i$ rather than $f(L_i)$ where $f$ is an increasing function).

lawyers' choices between different legal theories and how those choices interact with judge characteristics. But incorporating an option to drop the case might affect our results on the choice of legal theory and would seem to be a fruitful direction to pursue in future work.

One might wonder why $c_j$ accrues only if the judge rules *in favor* of the innovative theory and not whenever the judge rules on the innovative theory. Specifically, one might object that if the innovative theory pushes the boundaries of law then adjudicating it should entail an extra cost regardless of which way the decision comes out. Our justification for this modeling choice is that writing an opinion embracing a pathbreaking theory entails greater work than simply reaffirming existing doctrine. The judge must take great care to justify a dramatic departure from settled courses of conduct, to craft new doctrine, and to fit the new doctrine into existing structures. We could have separate costs for ruling in favor of and against the innovative theory ($c_j^1 > c_j^2 > 0$) but that would make things messier without capturing any new quantity of interest.

The idea of the repeated game is to contrast the short-term lawyer perspective with the longer-term perspectives of the client and the cause, and to contrast the client and cause perspectives.

## 3.3 Solution of Simple Version

This section presents the solution to a very simple version of the model where the lawyer knows $c_j$ and $\pi_j$ ($c$ and $\pi$ henceforth) before bringing case.

### 3.3.1 One-Shot Game

We solve backward. If the signal is unfavorable ($s = u$), it is easy to verify using Bayes' rule that the judge will always rule unfavorably to the party ($r = u$) regardless of the party's choice of legal theory. This in turn implies that the party will always choose $t = c$. The case where the signal is unfavorable is therefore uninteresting, and we concentrate henceforth on the more interesting case where the signal is favorable.

First consider the conventional theory. Using Bayes' rule, the judge's expected utility from ruling in favor of the party is given by $\frac{p\pi}{p\pi+(1-p)(1-\pi)}$ and the judge's expected utility from ruling against the party is $\frac{(1-p)(1-\pi)}{p\pi+(1-p)(1-\pi)}$. So the judge rules in favor of the conventional theory iff

$$p \geq 1 - \pi. \tag{2}$$

Next consider the innovative theory. Using Bayes' rule again we obtain that the judge would rule in favor of the innovative theory iff[4]

$$p \geq \frac{1 + c - c\pi - \pi}{1 + c - 2c\pi} \equiv p^*. \tag{3}$$

Note that if inequality (2) does not hold then (3) cannot hold either (in other words, $p^* > 1 - \pi$)—that is, a judge would rule in favor of the innovative theory only if she would also rule in favor of the conventional theory. Note also that $p^*$ falls in $[0, 1]$ for all $c < 1$; Assumption 1 is assuring that the innovative theory is not impossible.

Thus the judge's equilibrium strategy is as follows:

- If $p < 1 - \pi$ then $r = u$ (regardless of $t$).
- If $p \in [1 - \pi, p^*)$ then $r = \begin{cases} f & \text{if } t = c \\ u & \text{if } t = i \end{cases}$
- If $p \geq p^*$ then $r = f$ (regardless of $t$).

In light of that, if $p < 1 - \pi$ then the lawyer's payoff is $L_c$ if he brings a conventional case and $L_i$ if he brings an innovative case. If $p \in [1 - \pi, p^*)$ then the lawyer's payoff is $W_c$ if he brings a conventional case and $L_i$ if he brings an innovative case. And if $p \geq p^*$ then the lawyer's payoff is $W_c$ if he brings a conventional case and $W_i$ if he brings an innovative case. So, recalling the relationship

[4] Condition (3) can also be stated in terms of $c$: $c \leq \frac{p+\pi-1}{p\pi+(1-p)(1-\pi)} \equiv c^*$.

between the different possible payoffs, the lawyer's equilibrium strategy is

$$t = \begin{cases} c & \text{if } \ p < p^* \\ i & \text{if } \ p \geq p^* \end{cases}$$

On the equilibrium path,

- If $p < 1 - \pi$ then $t = c$ and $r = u$, with outcome $L_c$.
- If $p \in [1 - \pi, p^*)$ then $t = c$ and $r = f$, with outcome $W_c$.
- If $p \geq p^*$ then $t = i$ and $r = f$, with outcome $W_i$.

Note two features of the equilibrium. First, the lawyer brings an innovative theory only if it will prevail. This is intuitive given that the lawyer knows in advance whether a case will fail or succeed and given that losing on an innovative theory is the worst possible outcome. Second, having an innovative lawyer is always (weakly) better for the client than having a conventional lawyer.

The comparative statics are also intuitive: The probability of choosing the innovative theory and of winning increase in the strength of the case.[5] The probability of choosing the innovative theory and of winning decrease in the judge's bias against the party. The probability of choosing the innovative theory and of winning increase in the judge's aptitude or creativity (which is to say they decrease in the judge's cost of effort).

### 3.3.2 Repeated Game

Recall that in the repeated game the game ends (and payoffs are fixed for all future periods) when the judge adjudicates the innovative theory. The lawyers live for one period but the client's expected payoff is the sum of discounted payoffs over all periods. Recall also that in this version of the game the lawyer knows $\pi$ and $c$ in advance.

[5] Use of the word "probability" is somewhat abusive in this context; when we say the probability will increase we mean the range of parameters under which a condition holds will expand.

First consider the conventional lawyer. This lawyer must choose the conventional theory in every period. Thus, given the stage-game equilibrium derived in the last section, the party's expected per-period payoff is the same for every period and is given by

$$\int_{1/2}^{1-\pi} L_c f(p)dp + \int_{1-\pi}^{1} W_c f(p)dp$$

and the party's expected long-term payoff is

$$EU_p^c = \frac{1}{1-\delta}\left[\int_{1/2}^{1-\pi} L_c f(p)dp + \int_{1-\pi}^{1} W_c f(p)dp\right].$$

By contrast, under an innovative lawyer, the party's expected payoff is

$$EU_p^i = \frac{1}{1-\delta}\left[\int_{1/2}^{1-\pi} L_c f(p)dp + \int_{1-\pi}^{p^*} W_c f(p)dp + \int_{p^*}^{1} W_i f(p)dp\right]$$

(and the expected per-period payoff is the same in every period and is given by the undiscounted version of the last expression).

We see that a party is (weakly) better off with an innovative lawyer than a conventional lawyer in every single period and strictly better off with an innovative lawyer than a conventional lawyer overall (i.e., $EU_p^i > EU_p^c$). The same is true of the cause—the cause is never advanced with a conventional lawyer but will ultimately be advanced, though possibly very late, by the innovative lawyer.

Now we move beyond short-lived lawyers to consider three other perspectives: (1) a long-lived conventional lawyer, meaning a conventional lawyer who maximizes not the client's per-period expected payoff but the client's overall expected payoff, (2) a long-lived innovative lawyer, meaning one who maximizes the client's overall (not per-period) expected payoff, representing the client's (constrained) welfare benchmark, (3) the long-term perspective of "the cause," which is concerned only with the innovative dimension ($L_i < L_c = W_c = 0 < W_i$). As discussed, the point of the repeated game is to incorporate such variations in patience and outlook, potentially revealing interesting and counterintuitive insights.

However, given the information structure of the simple version of the game, these variations do not yield any interesting results. A conventional lawyer is, by assumption, incapable of doing anything other than bringing a conventional case, so the outcomes are no different as between a short-lived and long-lived conventional lawyer. More disappointingly, a long-lived innovative lawyer also would not act differently than a short-lived innovative lawyer under this simple version of the model: Given that the lawyer knows $c_j$ and $\pi_j$ perfectly in advance, which implies that the lawyer knows in advance whether a theory will succeed, and given that $L_i < L_c < W_c < W_i$, the lawyer's equilibrium strategy is to bring the innovative theory if and only if it will succeed. That is, the long-lived innovative lawyer's equilibrium strategy is

$$t = \begin{cases} c & \text{if } \; p < p^* \\ i & \text{if } \; p \geq p^* \end{cases}$$

which is no different than a short-lived innovative lawyer's equilibrium strategy and yields the same expected payoff.

With the solution of the simple version of the model in hand, we proceed to a more complicated and more interesting version.

## 3.4 Towards Solving a More Complicated Version

### 3.4.1 One-Shot Game

Assume there are two types of judges in terms of creativity or aptitude, $c_j \in \{c_h, c_\ell\}$, which we will call "ordinary" and "standout" judges. There are also two types of judges in terms of bias, $\pi_j \in \{\pi_b, \pi_u\}$, which we call "biased" and "unbiased" judges. So in all there are four types of judges—biased ordinary, biased standout, unbiased ordinary, unbiased standout. The lawyer does not know the type of judge before bringing the case but knows the joint distribution of creativity and bias. We denote the proportion of types by $\alpha_{bo}, \alpha_{bs}$, and so on.

We now face important modeling choices about the cost and bias parameters, which determine how the different types of judges would rule on the different theories depending on the strength of the case. If the four judge types are assumed to be very close to each other, then it is possible that either type would rule for or against either theory; if the types are assumed to be more distinct, then some types always rule one way on some theories. As a first cut, we make two assumptions:

Assumption 2: The best judges always rule in favor of the easy theory.

Assumption 3: The worst judges always rule against the hard theory.

"Always" here means for all $p > 1/2$. "Best" and "worst" judges mean, respectively, unbiased standout and biased ordinary. And "easy" and "hard" theories mean, of course, conventional and innovative theories.

Again we solve backward. Given Assumptions 2-3, the judge's decision does not depend on case strength for two of eight possible configurations, and there are six case-strength thresholds to be derived for the other configurations (six different $p^*$, with different subscripts denoting the theory and judge type), as the following tables show:

| | biased | unbiased |
|---|---|---|
| ordinary | $r = f$ iff $p \geq p^*_{cbo}$ | $r = f$ iff $p \geq p^*_{cuo}$ |
| standout | $r = f$ iff $p \geq p^*_{cbs}$ | $r = f$ |

Table 1: Judge's equilibrium decision rule on **conventional** theories

| | biased | unbiased |
|---|---|---|
| ordinary | $r = u$ | $r = f$ iff $p \geq p^*_{iuo}$ |
| standout | $r = f$ iff $p \geq p^*_{ibs}$ | $r = f$ iff $p \geq p^*_{ius}$ |

Table 2: Judge's equilibrium decision rule on **innovative** theories

We now proceed to derive the different $p^*$ thresholds. Under the conventional theory, we know by previous calculations that the judge rules $r = f$ iff $p \geq 1 - \pi_j$. Note that the cost parameter $(c_j)$ does not enter into this calculation, so the threshold must be the same for all biased judges and the same for all unbiased judges (regardless of aptitude). For biased judges we thus have $p^*_{cbo} = p^*_{cbs} = 1 - \pi_b \equiv p^*_c$. For unbiased standout judges, $r = f \ \forall \ p > 1/2$ (Assumption 2) implies that $\pi_u = 1/2$. So unbiased judges are *perfectly* unbiased (neutral) and always rule in favor of the conventional theory (regardless of aptitude).

Under the innovative theory, recall from (3) that the judge's decision rule is

$$r = f \ \text{ iff } \ p \geq \frac{1 + c_j - c_j\pi_j - \pi_j}{1 + c_j - 2c_j\pi_j}.$$

Assumption 3, that the biased ordinary judge's decision is $r = u \,\forall\, p$, yields $c_h \geq 1$.[6] This in turn implies that the *un*biased ordinary judge also always rules against the innovative theory. The judge's equilibrium decision rule from Tables 1 - 2 can thus be rewritten as follows (note that we used $\pi_u = 1/2$ to derive $p^*_{iu}$):

| | biased | unbiased |
|---|---|---|
| ordinary | $r = f$ iff $p \geq 1 - \pi_b \equiv p^*_c$ | $r = f$ |
| standout | $r = f$ iff $p \geq 1 - \pi_b \equiv p^*_c$ | $r = f$ |

Table 3: Judge's equilibrium decision rule on **conventional** theories

| | biased | unbiased |
|---|---|---|
| ordinary | $r = u$ | $r = u$ |
| standout | $r = f$ iff $p \geq \frac{1+c_\ell-c_\ell\pi_b-\pi_b}{1+c_\ell-2c_\ell\pi_b} \equiv p^*_{ib}$ | $r = f$ iff $p \geq \frac{1+c_\ell}{2} \equiv p^*_{iu}$ |

Table 4: Judge's equilibrium decision rule on **innovative** theories

Bearing in mind the judge's equilibrium strategy, we now proceed to analyze the lawyer's decision for four ranges of realization of $p$:

1. $p < \min\{p^*_c, p^*_{iu}\}$. Here $U_A(t = i) = L_i < L_c = \min\{U_A(t = c)\}$ so the lawyer chooses $t = c$.

[6] Recall that, by Assumption 1, $c_\ell < 1$.

2. $p \in (p_c^*, p_{iu}^*)$ or $p \in (p_{iu}^*, p_c^*)$ (depending on whether $p_c^* > p_{iu}^*$).

   (a) Consider the case $p_c^* < p_{iu}^*$. Then $U_A(t = i) = L_i < W_c = U_A(t = c)$ so the lawyer chooses $t = c$.

   (b) Consider the case $p_c^* > p_{iu}^*$. Here, the outcome is uncertain and the lawyer bases his decision on expected values depending on the proportion of judge types. He chooses $t = i$ iff $EU_A(t = i) \geq EU_A(t = c)$, or

$$\alpha_{us} W_i + (1 - \alpha_{us}) L_i \geq \alpha_u W_c + (1 - \alpha_u) L_c. \tag{4}$$

3. $p \in (\max\{p_{iu}^*, p_c^*\}, p_{ib}^*)$. The lawyer chooses $t = i$ iff

$$\alpha_{us} W_i + (1 - \alpha_{us}) L_i \geq W_c. \tag{5}$$

4. $p > p_{ib}^*$. The lawyer chooses $t = i$ iff

$$\alpha_s W_i + (1 - \alpha_s) L_i \geq W_c. \tag{6}$$

Together, Tables 3 - 4 and items 1-4 above describe the equilibrium strategy profile. Like in the simple game in § 3.3, having an innovative lawyer is better than a conventional lawyer. But unlike in the simple game in § 3.3, the lawyer does not always know the outcome of the case in advance and the worst outcome of losing on the innovative theory ($L_i$) can occur with positive probability.

The following desirable properties of the equilibrium are straightforward to verify: (1) $p_{iu}^* \in (0, 1)$ and $p_{ib}^* \in (0, 1)$, (2) $p_{ib}^* > p_c^*$, (3) $\partial p_c^* / \partial \pi < 0$, (4) $\partial p_{ib}^* / \partial \pi < 0$ (which implies $p_{ib}^* > p_{iu}^*$), (5) $\partial p_{ib}^* / \partial c > 0$ and $\partial p_{iu}^* / \partial c > 0$. That is, (1) it is possible to win on the innovative theory before both biased and unbiased judges, (2) it is harder to win on the innovative theory than on the conventional theory before a biased judge, (3) it is harder to win on the conventional theory before a biased judge when the bias is higher, (4) it is harder to win on the innovative theory before a biased standout judge when the bias is higher (which implies that it is harder to win on the innovative theory before a biased standout judge than an unbiased standout judge), (5) it is harder to win on the innovative theory before less-creative standout judges.

The relationship between $p_c^*$ and $p_{iu}^*$—that is, whether a party does better with a conventional theory before a biased judge or with an innovative theory before an unbiased standout judge—depends on the parameters. Specifically, $p_c^* > p_{iu}^* \iff 1 - 2\pi_b > c_\ell$. The more demanding the innovative case, and the lower the bias of the biased judge, the better off one is with a conventional theory before a biased judge than with an innovative theory before an unbiased standout judge.

One interesting question to ask about the equilibrium concerns the conditions which must be satisfied for lawyer-instigated legal innovation to occur. The relevant conditions are equations (5) and (6) when $p_c^* < p_{iu}^*$ and equations (4), (5), and (6) when $p_c^* > p_{iu}^*$. Note that (5) cannot hold if either of (4) or (6) does not hold, so we can focus on the latter two. In the case where $p_c^* < p_{iu}^*$ (that is, when the bias and difficulty parameters are such that a party does better with a conventional theory before a biased judge than with an innovative theory before an unbiased standout judge), there is a single necessary and sufficient condition (equation (6)) for the innovative legal theory to be argued with positive probability. In the case where $p_c^* > p_{iu}^*$ (that is, when the bias and difficulty parameters are such that a party does better with an innovative theory before an unbiased standout judge than with a conventional theory before a biased judge), conditions (4) and (6) are each sufficient, and "(4) or (6)" is necessary, for the innovative legal theory to be argued with positive probability.

A remarkable fact about these conditions is that judge creativity is more important than judge neutrality (lack of bias) in ensuring the survival of lawyer-instigated doctrinal innovation. Specifically, for any population proportion of biased judges (even 100 percent), any nondegenerate degree of bias, and any well-ordered specification of win-loss payoffs for conventional and innovative theories, there exists some proportion of creative judges high enough to guarantee that the innovative theory will be argued with positive probability. Formally, for all $\alpha_b$, $\pi_b > 0$, and $L_i < L_c < W_c < W_i$ there exists $\alpha_s$ such that $\Pr(t = i) > 0$ in equilibrium. But the analogous conclusion does not hold if we fix judge creativity and payoffs and vary judge bias. That is, it is not true that for any profile of judge creativity and payoffs there exists some proportion of unbiased judges high enough to guarantee the survival of lawyer-instigated doctrinal innovation. For example, if $\alpha_s W_i + (1 - \alpha_s)L_i < L_c$ then the innovative theory is never litigated, regardless of $\alpha_u$.

Another interesting question concerns the success rate of different legal theories and the success rate before different judge types. Are innovative arguments less successful overall than conventional arguments? And is the party's success rate higher before unbiased judges than biased judges? The answer to both questions is sometimes yes and sometimes no.

To illustrate, for the first question, assume that $p_c^* < p_{iu}^*$ and that condition (6) holds but (5) does not hold. Then the success rate of the conventional theory is given by

$$\begin{aligned} &\frac{\Pr\{p < p_c^*\}}{\Pr\{t = c\}}\alpha_u + \frac{\Pr\{p \in (p_c^*, p_{iu}^*)\}}{\Pr\{t = c\}} + \frac{\Pr\{p \in (p_{iu}^*, p_{ib}^*)\}}{\Pr\{t = c\}} \\ &\quad = \left[\int_{0.5}^{p_{ib}^*} f(p)dp\right]^{-1} \left[\alpha_u \int_{0.5}^{p_c^*} f(p)dp + \int_{p_c^*}^{p_{ib}^*} f(p)dp\right] \end{aligned}$$

and the success rate of the innovative theory is $\alpha_s$. Of course, which of these two success rates is higher depends on the distribution of $p$. For example, if almost all of the distribution is concentrated in the interval $(p_c^*, p_{ib}^*)$ then the success rate of the conventional theory goes to 1 and is higher than that of the innovative theory. On the other hand, if the distribution is bimodal with almost all of the mass in $(0.5, p_c^*)$ and $(p_{ib}^*, 1)$, then which success rate is higher depends on whether $\alpha_b > \alpha_s$. Indeed, the answer is ambiguous even if we take the most "neutral" distribution and assume that $p \sim \mathrm{U}[0.5, 1]$. In that case, some algebra reveals that the success rate of the conventional theory is higher than that of the innovative theory iff

$$p_{ib}^*(1-\alpha_s) - p_c^*(1-\alpha_u) > \frac{\alpha_u - \alpha_s}{2}.$$

Whether this inequality holds depends on $\alpha_s$ and $\alpha_u$. For example, if $\alpha_s = \alpha_u$, or $\alpha_s = 0.1$ and $\alpha_u = 0.8$, then the inequality holds, but if $\alpha_s = 1$ and $\alpha_u = 0$, or $\alpha_s = 0.8$ and $\alpha_u = 0.1$, then the inequality does not hold. Therefore, even though an innovative theory is harder to prevail on than a conventional theory, the success rate of innovative theories may be greater than that of conventional theories depending on the distribution of case strength and judge types.

The same is true for the comparison of success rates before biased and unbiased judges. Of course, *conditional* on case strength and theory and judge creativity, the party is always (weakly) better off before an unbiased judge than a biased judge. What is more, because in this game the lawyer chooses his strategy based on the distribution of bias and creativity *over a pool* of judges, it follows that *within* every such pool the expected success rate is greater before unbiased judges than biased judges. However, the same is not always true *across* different groups of judges—for example, across different jurisdictions—and the overall success rate may be higher before biased judges than unbiased judges.

To illustrate, suppose $p_c^* < p_{iu}^*$, fix some profile of payoffs $L_i < L_c < W_c < W_i$, some proportion of standout judges $\alpha_s$, and some cost and bias parameters $\pi_b$ and $c_\ell$, and compare two jurisdictions $J_1$ and $J_2$ where in $J_1$ both conditions (5) and (6) hold but in $J_2$ only condition (6) holds. Then the party's success rate in $J_1$ is given by

$$\int_{0.5}^{p_c^*} \alpha_u^{J_1} f(p)dp + \int_{p_c^*}^{p_{iu}^*} f(p)dp + \int_{p_{iu}^*}^{p_{ib}^*} \alpha_{us}^{J_1} f(p)dp + \int_{p_{ib}^*}^{1} \alpha_s f(p)dp$$

and the success rate in $J_2$ is

$$\int_{0.5}^{p_c^*} \alpha_u^{J_2} f(p)dp + \int_{p_c^*}^{p_{iu}^*} f(p)dp + \int_{p_{iu}^*}^{p_{ib}^*} f(p)dp + \int_{p_{ib}^*}^{1} \alpha_s f(p)dp.$$

It is clear from these expressions that although the proportion of unbiased standout judges is greater in the first jurisdiction than in the second (which is true by hypothesis because (5) holds only in the former), the party's success rate may be greater in the second jurisdiction. And this can be true even though we have posited that the proportion of standout judges is equal in both jurisdictions and even if the proportion of unbiased judges is greater in the first jurisdiction. That is, even though the judges in the first jurisdiction are *more* favorably disposed toward the party, it could be that in expectation they rule in the party's favor *less* frequently than the judges in the second jurisdiction.

The intuition behind the results concerning theory type and judge type is that there are two opposite forces at work. On one hand there are theory-type and judge-type effects, which lower the success rate of harder theories and of cases before less-creative and more-biased judges; on the other hand there is a selection effect, meaning that the lawyer is more likely to try the harder theories when the judges are more favorable, which boosts the success rate of harder theories and of cases before unfavorable judges. One or the other effect may predominate depending on parameter values.

These results sound an important cautionary note about drawing inferences about doctrinal innovation and judicial ideology from observational data on judge votes or case outcomes. They show that, because of the selection effect, the success rate of a legal theory is not a reliable measure of whether it is pushing legal boundaries. That is, harder (more innovative, more novel) theories might sometimes be more successful. Perhaps more importantly in application, our results show that estimating judicial ideology based on judge votes on cases is also problematic—at least across jurisdictions—again because of the selection effect. Parties may reach farther and try harder theories when the pool of judges is more favorable, leading in expectation to *fewer* favorable votes by *more* sympathetic judges.

It is worth repeating that in this framework, the selection effect does not undermine estimates of judicial preferences *within* a jurisdiction (for example, within a federal circuit court of appeals or a state or federal supreme court), but it may undermine such estimates when judges from *different* jurisdictions (for example, different federal circuit courts or state supreme courts) are evaluated in the same space. For present purposes, the term "jurisdiction" should be interpreted in a way that corresponds to a party's expectation of the pool of judges that is relevant in determining the outcome of its case. For example, when it comes to questions of federal law, different federal circuit courts all technically apply the same law, but they should be treated as different jurisdictions when a party expects that the regional circuit court will have the last word on the case (as will almost always be true, except for the rare case that is practically earmarked in advance for Supreme Court review).

### 3.4.2 Repeated Game

We are currently solving the repeated game.

# References


Baker, Scott and Claudio Mezzetti. 2012. "A Theory of Rational Jurisprudence." *Journal of Political Economy* 120(3):513–551.

Baker, Scott and Gary Biglaiser. 2014. "A Model of Cause Lawyering." *Journal of Legal Studies* 43(1):37–63.

Beim, Deborah. 2017. "Learning in the Judicial Hierarchy." *Journal of Politics* 79(2):591–604.

Beim, Deborah, Alexander V. Hirsch and Jonathan P. Kastellec. 2014. "Whistle-blowing and Compliance in the Judicial Hierarchy." *American Journal of Political Science* 58(4):904–918.

Cameron, Charles M., Jeffrey A. Segal and Donald Songer. 2000. "Strategic Auditing in a Political Hierarchy: An Informational Model of the Supreme Court's Certiorari Decisions." *American Political Science Review* 94(1):101–116.

Carrubba, Clifford J. and Tom S. Clark. 2012. "Rule Creation in a Political Hierarchy." *American Political Science Review* 106(3):622–643.

Eskridge, William J. 2008. *Dishonorable Passions.* Viking.

Fox, Justin and Georg Vanberg. 2014. "Narrow versus broad judicial decisions." *Journal of Theoretical Politics* 26(3):355–383.

Gennaioli, Nicola and Andrei Shleifer. 2007. "The Evolution of Common Law." *Journal of Political Economy* 115(1):43–68.

Hadfield, Gillian K. 2008. "The Levers of Legal Design: Institutional Determinants of the Quality of Law." *Journal of Comparative Economics* 36(1):43–73.

Hübert, Ryan. 2019. "Getting Their Way: Bias and Deference to Trial Courts." *American Journal of Political Science* 63(3):706–718.

Irons, Peter. 1988. *The Courage of Their Convictions.* Free Press.

Kornhauser, Lewis A. 1992. "Modeling Collegial Courts. II. Legal Doctrine." *Journal of Law, Economics, & Organization* 8(3):441–470.

Lax, Jeffrey R. 2003. "Certiorari and Compliance in the Judicial Hierarchy: Discretion, Reputation and the Rule of Four." *Journal of Theoretical Politics* 15(1):61–86.

Lax, Jeffrey R. 2012. "Political Constraints on Legal Doctrine: How Hierarchy Shapes the Law." *Journal of Politics* 74(3):765–781.

Murdoch, Joyce and Deb Price. 2001. *Courting Justice: Gay Men and Lesbians v. The Supreme Court.* Basic Books.

Parameswaran, Giri. 2018. "Endogenous cases and the evolution of the common law." *RAND Journal of Economics* 49(4):791–818.

Parameswaran, Giri, Charles M. Cameron and Lewis A. Kornhauser. 2021. "Bargaining and Strategic Voting on Appellate Courts." *American Political Science Review* 115(3):835–850.

Shadmehr, Mehdi, Sepehr Shahshahani and Charles Cameron. 2022. "Coordination and Innovation in Judiciaries: Correct Law vs. Consistent Law." *Quarterly Journal of Political Science* 17(1):61–89.

Shahshahani, Sepehr. 2021. "The Fact-Law Distinction: Strategic Factfinding and Lawmaking in a Judicial Hierarchy." *Journal of Law, Economics, & Organization* 37(2):440–477.

Shahshahani, Sepehr. 2022. "Hard Cases Make Bad Law? A Theoretical Investigation." *Journal of Legal Studies* 51(1):133–175.