Precedent-Based Judgment Aggregation in the U.S. Supreme Court

Sarah E. Friedman[a] and **John A. Weymark**[b]

[a] *Harvard Law School, 1563 Massachusetts Avenue, Cambridge, MA 02138, USA. E-mail:* sfriedman@jd25.law.harvard.edu

[b] *Department of Economics, Vanderbilt University, VU Station B #351819, 2301 Vanderbilt Place, Nashville, TN 37235-1819, USA. E-mail:* john.weymark@vanderbilt.edu

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Abstract. When a case is before the U.S. Supreme Court, a precedent may apply. In cases in which a precedent is being considered, the Court needs to answer three questions: (1) Is the precedent good law? (2) Does the precedent apply to this case? (3) Should the Court uphold the precedent? In the event that the Court answers yes to the first two questions and no to the last, there is what David S. Cohen (*Boston University Law Review*, 2010) calls a precedent-based voting paradox. Cohen has identified eleven instances of this paradox in U.S. Supreme Court decisions prior to 2010. We review Cohen's paradox and relate it to the doctrinal paradox that has played a foundational role in the judgment aggregation literature. We also identify what is arguably one more instance of a precedent-based voting paradox in the period since Cohen's article was published.

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1. Introduction

Collective bodies routinely aggregate the preferences, beliefs, or judgments of their members. Aggregation procedures underlie the decisions made by a wide range of collective entities—collegial courts, legislative bodies, and expert panels, to name just a few.[1] In this article, we are concerned with a judgment aggregation paradox introduced by David S. Cohen (Cohen, 2010) that sometimes arises in rulings made by the U.S. Supreme Court.

When a case is before the U.S. Supreme Court, a precedent may apply. In cases in which a precedent is being considered, the Court needs to answer three questions: (1) Is the precedent good law? (2) Does the precedent apply to this case? (3) Should the Court uphold the precedent? In the event that the Court answers yes to the first two questions and no to the last, there is what Cohen calls a *precedent-based voting paradox*. Cohen has identified eleven instances of this paradox in U.S. Supreme Court decisions prior to 2010.

Cohen's paradox contributes to the theory and application of judgment aggregation. It is related to the well-known doctrinal paradox introduced by Lewis Kornhauser and Lawrence Sager in their analyzes of decision-making in collegial courts (Kornhauser and Sager, 1986, 1993; Kornhauser, 1992, 2008). The *doctrinal paradox* occurs when a court's decision on a case by a majority vote of the judges is different from the decision that would be made if it were instead based on separate votes on the dispositive issues. In discussing a Supreme Court case that is an instantiation of the doctrinal paradox, Cohen (2011, p. 824) notes "that its outcome ... turned not on grand theories of constitutional law, history, or doctrine, but rather on the minutiae of Supreme Court vote counting."[2] This observation applies more generally whenever the opinions on the dispositive issues and votes on the outcome exhibit the features of a doctrinal paradox.

Cohen's paradox is virtually unknown outside the community of legal scholars.[3] One of the goals of this article is to introduce Cohen's precedent-based voting paradox to the wider community of judgment aggregation scholars. We show that Cohen's paradox is a special case of the doctrinal paradox, albeit one that merits separate consideration. We also identify what is arguably one more instance of a precedent-based voting paradox in the rulings by the Supreme Court in the period since Cohen's article was published: *Coleman v. Court of Appeals of Maryland*.[4] Whether the judgments in *Coleman* instan-

[1] A court is collegial if there is more than one judge. The U.S. Supreme Court has nine justices, and so is collegial.

[2] The case is *McDonald v. City of Chicago*, 561 U.S. 742 (2010). *McDonald* is a landmark case concerning gun rights.

[3] Since these words were written, Peter Coy (Coy, 2021) has published an opinion column in the *New York Times* that discusses Cohen's precedent-based voting paradox. According to Google Scholar (last accessed on February 11, 2022), there are only two citations to Cohen (2010) outside the legal literature: Saari (2013, 2014). In both cases, Saari merely mentions that Cohen has a legal voting paradox but does not say what it is.

[4] 56 U.S. 30 (2012).

tiate a precedent-based voting paradox depends on how Justice Scalia's concurrence in the ruling is interpreted. We provide a plausible interpretation that supports the view that *Coleman* is an instance of a precedent-based voting paradox. An alternative view of judicial adjudication in terms of preference aggregation has been proposed by Spitzer (1979) and Easterbrook (1982). Cohen (2010) has outlined a preference aggregation version of his paradox. We also discuss this paradox and how it relates to its judgment aggregation counterpart.

Mongin (2019, p. 417) has recently suggested that "the future of judgment aggregation theory lies with its applications rather than its internal theoretical development." In other words, future theoretical developments would best be directed to analyzing problems that arise in applications rather than from further development of the abstract theory divorced from actual practice. In this regard, Mongin offers some remarks about how judgment aggregation theorists can provide insight about observations made by legal scholars based on their analyzes of case law. Mongin notes that the primary focus of the legal literature on judgment aggregation has been on (1) the identification of instances of the doctrinal paradox in U.S. collegial courts and (2) the relative merits of the two ways of adjudicating a case mentioned above: issue-based or case-based. Even though the contributors to this literature have advanced our appreciation for and our understanding of the processes by which collegial courts make decisions, Mongin (2019, p. 427) believes that their writings suffer from a number of deficiencies that are due, at least in part, to the fact that "legal theorists do not use any [formalism] or provide sketches that fall below the mark." For this reason, he calls for further clarification, elaboration, and formalism of their analyzes. By subjecting Cohen's presentation of his precedent-based voting paradox to critical scrutiny, we are heeding Mongin's call for an application-based analysis.

Judgment aggregation theory is concerned with the consistent aggregation of individual judgments about a set of propositions into a collective judgment when there are logical connections between the propositions.[5] The judgment aggregation literature has two main branches. In one, the properties of a specific aggregation rule are analyzed in the presence of some particular logical connection between the propositions, often with a focus on paradoxical or other unsatisfactory features of the aggregation rule. In the other, the consistency of various normative properties that have been proposed for judgment aggregation rules is investigated. We contribute to the first branch of this literature. Insightful introductions to judgment aggregation theory may be found in Mongin and Dietrich (2010), List (2012), Mongin (2012), and Grossi and Pigozzi (2014).

The plan of the rest of this article is as follows. In Section 2, we present the doctrinal paradox. In Section 3, we comment on some features of this paradox. In Section 4, we discuss *stare decisis*, which is a legal doctrine that is concerned with respect for precedent. In Section 5, we introduce Cohen's precedent-based voting paradox and discuss its

[5]In order to emphasize the centrality of the logical connections of the judgments being made, Mongin (2012) suggests referring to this body of work as *logical aggregation theory*. We retain the more familiar terminology here.

relationship to the doctrinal paradox. In Sections 6 and 7, we argue that *Coleman* plausibly provides another instance of Cohen's paradox in Supreme Court rulings in addition to the ones identified by him. In Section 8, we discuss how judicial adjudication and precedent-based voting paradoxes can be modeled in terms of preference aggregation. Finally, in Section 9, we provide some concluding remarks.

2. The Doctrinal Paradox

A fundamental feature of the doctrinal paradox is that the judgments on some propositions logically constrain the judgments on other propositions. It is this logical interdependence that underlies the various judgment aggregation dilemmas that have been identified.

Judgments take many forms. We focus on *dichotomous* judgments—a proposition is either acceptable or it is not. Acceptability can be given a number of different interpretations depending on the application. For example, a court might be asked to determine whether a defendant is guilty beyond a reasonable doubt in a criminal case, is liable for damages in a tort case, or has standing to have a constitutional case adjudicated. In each of these applications, we view the propositions under consideration as statements that are either affirmed or denied even though in a particular application alternative terminology may be more appropriate. For example, when a plaintiff petitions a court, affirming the proposition that a court must rule on corresponds to granting the petition, whereas denying it corresponds to its rejection.

The best known dilemma of judgment aggregation theory is the *doctrinal paradox*. We illustrate this paradox with the example of a collegial court adjudicating a breach of contract case introduced by Kornhauser and Sager (1993, pp. 10–12). This and related examples considered by Kornhauser and Sager (1986) and Kornhauser (1992) provided the motivation for the development of judgment aggregation theory.[6]

Example 1. Two parties have an agreement to perform certain actions. There is no dispute that an agreement was entered into. One of the parties, the plaintiff, alleges that the agreement is a contract (and, hence, legally binding) and that the other party, the defendant, is in breach of it, and so should be held liable and ordered to pay compensation to the plaintiff. Whether there is legal liability is to be determined by a three-member court. The proposition being considered is:

r : The defendant is liable for a breach of contract.

The question is whether r has been established according to the relevant legal standard (e.g., on the basis of the balance of probabilities). If it has, then r is affirmed; otherwise, it is denied. To determine whether the defendant is liable, the judges must first settle two issues. They are:

[6]Earlier precursors have subsequently come to light but they did not play such a foundational role. See Mongin and Dietrich (2010), List (2012), and Mongin (2012).

p**:** The defendant and plaintiff entered into a contract.

q**:** The defendant breached their agreement.

The relevant legal doctrine is that a defendant in a lawsuit for breach of contract is liable if p and q are both affirmed. Formally, this legal doctrine is the *material conditional*,

$$p \wedge q \rightarrow r. \tag{1}$$

It is this conditional statement that provides the logical interconnection between the three propositions: p, q, and r.

Two methods of adjudication are considered: *case-based* and *issue-based*. With the former, the disposition of the case is based on a collective judgment about r. With the latter, collective judgments about each of the issues p and q are formed, with the disposition of the case determined by using the legal rule (1) to then infer the judgment about r. With either method of adjudication, majority rule is used to aggregate the judgments of the judges on the propositions into a collective judgment.

	The agreement is a contract. (p)	The agreement was breached. (q)	The defendant is liable. (r)
Judge 1	affirm	affirm	affirm
Judge 2	affirm	deny	deny
Judge 3	deny	affirm	deny
Majority	affirm (2-1)	affirm (2-1)	deny (2-1)

Table 1: The Kornhauser–Sager Example of the Doctrinal Paradox

The opinions of the three judges on the two issues are shown in Table 1. The final row shows the majority vote for each of the three propositions.

Judges 1 and 2 find that a contract was entered into, whereas Judges 1 and 3 find that the agreement was breached. Each judge's opinion on the merits of the case is determined by the legal doctrine (1) according to his or her opinions on the two issues. Thus, only Judge 1 finds the defendant liable.

With the case-based method of adjudication, the decision of the court is determined by a majority vote on r. In this case, two judges have affirmed r, so the defendant is found to be not liable.

With the issue-based method of adjudication, a majority judgment on each of the two issues reaches the conclusion that both p and q should be affirmed. Applying the legal doctrine (2) to these collective judgments on the two issues, it follows that r should also be affirmed, and so the defendant is found to be liable.

Thus, the two adjudication methods result in contradictory dispositions of the case. Consequently, whether the defendant is found to be liable or not depends on which procedure is used to decide the case. The dependence of the decision on the procedure

adopted arises because there is only one judge who sides with the majority on both issues, and so he or she is in the minority when the judgments about the case are considered.

More generally, the doctrinal paradox applies to situations in which judgments on the dispositive issues are used to determine the outcome in a case, the issues and possible outcomes under consideration are dichotomous, and the collective judgments are made using majority rule. There is a *doctrinal paradox* if the case-based and issue-based methods of adjudication result in different outcomes.[7]

In Example 1, the legal doctrine has the material conditional form given in (1). That is, p and q are sufficient for r. The doctrinal paradox can also arise in other kinds of cases than the one considered in Example 1, ones in which a different legal doctrine applies. In some cases, p and q are necessary and sufficient for r (using the same notation as in Example 1 to denote the propositions under consideration).[8] In other words, the legal doctrine has the *biconditional* form,

$$p \wedge q \leftrightarrow r. \tag{2}$$

For the pattern of individual judgments about the issues exhibited in Table 1, there is a doctrinal paradox regardless of whether the legal doctrine is given by (1) or (2). Note, however, that with the biconditional form of the doctrine, the judgments about r are uniquely determined by the judgments about p and q. This is not the case with the material conditional form of the legal doctrine. In this case, the judgment of the first judge about the case is constrained by his or her judgments on the dispositive issues, but the judgments of the other two judges are not. If, contrary to the judgments in Table 1, either Judge 2 or 3 affirms r (perhaps because he or she thinks that some other considerations are decisive), then there is no doctrinal paradox because the issue-based and case-based decisions coincide.

In (1) and (2), the legal doctrine is presented in a *conjunctive form*. Sometimes, legal doctrines are stated disjunctively. One *disjunctive form* of the doctrinal paradox employs the legal doctrine

$$p \vee q \leftrightarrow r. \tag{3}$$

[7]An alternative perspective on the doctrinal paradox has been provided by List and Pettit (2002). They observe that the set of propositions $\{p, q, r, \neg p, \neg q, \neg r\}$ contains three propositions that are logically inconsistent relative to the legal doctrine (1) and that no smaller subset exhibits this inconsistency. For example, p, q and $\neg r$ are such a subset. In this abstract form, p and q are premises, r is the conclusion, and (1) specifies the logical connection between p, q, r, and their negations. It is this observation about the inconsistency of a subset of at least three propositions relative to a constraint specifying a logical connection between the propositions that has provided the foundation for the formal development of judgment aggregation theory.

[8]In their version of Example 1, Kornhauser and Sager (1993, p. 10) say that the "orthodox view of the law of contract" requires damages to be paid if the plaintiff prevails on both of the dispositive issues. In our formulation, this regards p and q as being necessary for r. However, as our referee has pointed out, this is not an accurate description of actual practice. For example, for reasons of public policy, courts have dismissed improvident contracts entered into by minors. In his discussion of a tort example used to illustrate the doctrinal paradox, Kornhauser (2008, ft. 24) appeals to the legal doctrine in the material conditional form given in (1).

Examples of the doctrinal paradox in this disjunctive form may be found in Kornhauser and Sager (1986), Kornhauser (1992), and Pettit (2001). If the propositions in (3) are the negations of the corresponding propositions in (2), the two doctrines are logically equivalent—the only difference between them is whether the propositions are stated in the affirmative or not.[9]

It is straightforward to generalize Example 1 to allow for more dispositive issues and more judges. The essential features of the doctrinal paradox are that (1) issue-based and case-based methods of adjudication reach opposite conclusions about the disposition of a case when majority rule is used to form collective judgments and (2) the legal doctrine is given by the affirmation or denial of a proposition involving the conjunction and/or disjunction of the dispositive issues.

3. Some Observations About the Doctrinal Paradox

In the doctrinal paradox, the judgments take a binary form. This feature of the paradox may be less restrictive than one might think at first glance. Even if the options are not dichotomous, as Kornhauser (1992, p. 443) notes, "[l]egal doctrine invariably breaks down its decisions into a sequence of binary choices." For example, when a decision of an appellate court is forwarded to the Supreme Court for judicial review under a writ of *certiorari*, the Court may affirm or reverse the lower court. However, it can also send back (remand) the case for further consideration. Hence, there are three possible dispositions. Situations like this can be thought of in terms of a sequence of two dichotomous choices—first deciding whether to remand or not, and if not remanded, deciding whether to affirm or reverse. Nevertheless, it is not always possible to frame judicial questions dichotomously. For example, in Scottish criminal law, a verdict of "not proven" is permitted in addition to "guilty" or "not guilty."[10]

A striking feature of Example 1 is that Judges 2 and 3 agree on the merits of the case but do so for different reasons. This is a common feature of judicial decision-making, with concurrences written in support of a decision advancing different reasons for it than those offered by a majority or plurality of the court. Mongin (2019, p. 427) observes that this "spurious unanimity" is analogous to the spurious unanimity that may arise in ranking uncertain alternatives when these rankings are based on different beliefs and tastes (Mongin, 2016). The latter kind of spurious unanimity can also result in unpalatable collective decisions.

The fact that judges may agree with a decision but do so for different reasons suggests that instances of the doctrinal paradox should not be unexpected in practice. Indeed, a number of examples of the doctrinal paradox in Supreme Court decisions have been

[9]More complex legal doctrines are also possible that employ combinations of conjunctions and disjunctions. See Mongin and Ferey (2022).

[10]This third possibility plays a pivotal role in Wilkie Collins' novel, *The Law and the Lady* (Collins, 1875).

identified.[11] Easterbrook (1982, p. 807), writing before the doctrinal paradox was introduced by Kornhauser and Sager, offers a reason for why this is the case for the Supreme Court:

> Doubtless the Court can agree on a result more easily than five or more justices can agree on the many propositions of law and logical steps that make up a full opinion. The Court's attempt to provide reasoned explanations for its decisions thus contributes to the extent of disagreement among its members.

Potential disagreements among the justices may also be exacerbated by the fact that the Supreme Court has discretion to determine most of the cases on its docket. With some exceptions, the non-discretionary cases that the Court takes up are hard to decide. Easterbrook (1982, pp. 805–807, footnote omitted) suggests that as "Congress has whittled away at the Court's mandatory docket[, it] is likely that the residual group of discretionary cases contains an increasingly high proportion of the hard-to-decide problems that call forth divisions."

Given the need to provide reasoned arguments in support of hard-to-decide cases, it is perhaps surprising that very few instances of the doctrinal paradox have been found in the Court's decisions. One reason for their rarity is that some of the relevant information needed to determine if there is a doctrinal paradox may not be publicly available.[12] In the official record of a case, one of the justices (on behalf of the justices in the plurality) provides an *opinion* that announces the ruling of the Court, sets out the rationale for it, and indicates which of the justices support this opinion. The other justices either write or support a concurrence or dissent (possibly only concurring or dissenting in part from the plurality opinion). A *concurrence* sets out a different rationale for reaching the ruling, whereas a *dissent* provides reasons for disagreeing with it. From the opinions, concurrences, and dissents, one can discern each justice's preferred resolution of the case. However, their judgments on the dispositive issues may not be explicitly addressed.[13]

Stearns (2000, p. 101, footnote omitted) provides a succinct description of this problem:

> Because the Court employs outcome voting, ... the justices are not called upon to choose from a complete list of all possible rankings of available options over combined issue and outcome resolutions. Instead, through their

[11] See, for example, Kornhauser and Sager (1986, 1993), Kornhauser (1992), Post and Salop (1992), Rogers (1996), Stearns (2000), and Nash (2003). Mongin and Ferey (2022) have recently identified examples of the doctrinal paradox in the deliberations of the French Constitutional Council.

[12] In commenting on studies of the prevalence of the doctrinal paradox, Mongin (2019, p. 426) remarks that "a major defect of these empirical investigations, they do not distinguish sufficiently between the low prevalence of the paradox and the fact that it is difficult to recognize."

[13] Mongin and Ferey (2022) suggest that there may be some bias about which judgments do not make it into the record. Justices who dissent with a ruling may feel more need to make their judgments about the dispositive issues explicit than those justices who concur with it.

> judicial opinions, justices provide us with what can best be understood as fragmented statements of judgment concerning the resolution of issues necessary to deciding the case. Over a sufficiently large number of cases, these fragments can be pieced together to derive a more general sense of each justice's jurisprudential view of a larger set of issues, although the information invariably remains incomplete.

As Stearns notes, sometimes it may be necessary to infer what a justice's judgments are in a case based on what has been said in other rulings. Justices also deliver lectures and write articles and books that provide insight into their jurisprudential views. Furthermore, after retiring from the Court, some justices make public their private papers. These documents contain information about the private deliberations of the justices, thereby providing retrospective insight into the justices' views.[14] Nevertheless, to the extent that the relevant information is incomplete, the inferences drawn are speculative and subject to some uncertainty.[15]

One reason why the record may be incomplete is that it is sometimes not necessary to know the judgments on all of the dispositive issues in order to justify a judgment about the outcome. For example, if the legal doctrine has one of the conjunctive forms given in (1) or (2), a justice who denies r only needs to deny one of p and q in order to justify this view; his or her judgment on the other issue is moot. Similarly, if the legal doctrine has the disjunctive form given in (3), it is sufficient for a justice who affirms r to rationalize this conclusion by affirming one of p and q.

Post and Salop (1992, pp. 755–758) suggest that when a judgment about the outcome only requires a judgment on one of the dispositive issues, it may be strategically advantageous for a justice not to express a view about any other issue because doing so might make it apparent that there is a doctrinal paradox that would otherwise remain hidden. Post and Salop illustrate this point in their analysis of *Hoffman v. Connecticut Department of Income Maintenance*.[16] Based on the written record, there is no doctrinal paradox. However, if Justice Scalia had expressed his likely view about the issue on which he remained silent, there would be. If this view had been expressed in conference, other justices may have responded in such a way that the ruling on the case would have been reversed. Similarly, Mongin and Ferey (2022) conjecture that in the deliberations of the French Constitutional Council on January 18, 1985 about the constitutionality of article 27-2 of the Chevènement law (a law concerning education), one of the adjudicators, Vedel, drafted the decision so as to obfuscate the presence of a doctrinal paradox.

[14]The complete minutes of the deliberations of the French Constitutional Council are made available after 25 years. See Mongin and Ferey (2022).

[15]This problem is a general one for identifying collective decision-making paradoxes in practice. See Hylland (2006) for a discussion of this issue in the context of legislative decision-making.

[16]492 U.S. 96 (1989). *Hoffman* is a case concerning the scope of a State's immunity from a lawsuit. Mongin and Ferey (2022) endorse Post and Salop's conclusion that *Hoffman* shows that a conflict between case-based and issue-based methods of adjudication may create incentives for strategic behavior. They also observe that this case illustrates the possible difficulties involved in inferring a justice's views on an issue from the public record.

4. *Stare Decisis*

Judicial adjudication in common-law legal systems has two main purposes—it serves to resolve disputes and it adds to the canon of law. The American federal courts have an hierarchical structure. Trial courts apply established law to the facts of the case in order to render a decision. The role of the appellate courts below the Supreme Court is to review and correct errors in the application of the law at the trial level. At the top of the hierarchy is the Supreme Court, which is concerned with articulating what the law requires. In so doing, it interprets and extends established laws. These laws in turn guide the decisions of lower level courts. Thus, simplifying somewhat, federal appeals courts specialize in error correction, whereas the Supreme Court specializes in lawmaking.[17]

When adjudicating a case, the Supreme Court needs to decide if a precedent applies and, if so, whether it should be followed. In legal terms, the justices decide whether to adhere to *stare decisis*, "a judicial doctrine under which a court follows the principles, rules, or standards of its prior decisions or decisions of higher tribunals when deciding a case with arguably similar facts" (Murrill, 2018, p. 4). In the case of the Supreme Court, the legal determination of the issue presented to the Court for adjudication (the *holding*) serves as a precedent, whereas the comments in the opinion that are not necessary for the ruling (the *dicta*) and the findings of fact that do not bear on the scope of the ruling do not.[18] Adherence to *stare decisis* "supports the legitimacy of the judicial process and fosters the rule of law by encouraging stability, certainty, predictability, consistency and uniformity in the application of the law to cases and litigants"(Murrill, 2018, pp. 6–7).

Nevertheless, there are situations in which it is appropriate to depart from precedent. Murrill (2018) identifies five factors that justices in the Supreme Court consider when deciding whether to overrule a precedent related to constitutional matters: (1) the quality of the reasoning used in the decision establishing the precedent, (2) whether the precedent is too difficult to adhere to (i.e., its rules and standards are unworkable), (3) whether the precedent is inconsistent with other related rulings of the Supreme Court, (4) whether the understanding of the underlying facts has changed, and (5) whether retaining a flawed precedent is warranted because the harms to those who have relied on the precedent would be unacceptable should the precedent be overturned. This list of factors is not exhaustive.[19]

[17]This description of the structure of American federal courts draws on Kornhauser (2008, pp. 12–13).

[18]The Supreme Court has much more latitude to overturn precedent than lower courts, who are bound by Supreme Court precedents. When the justices are not unanimous in ruling on a case, it may not be clear what the holding is that serves as the binding precedent. Since *Marks v. United States* (430 U.S. 188 (1977)), the holding is taken to be the opinion of the justices who concurred with the ruling on the "narrowest grounds." When the opinions in a Supreme Court case that serves as a precedent are instantiations of a doctrinal paradox, it may not be clear what the narrowest grounds are. For discussions of the narrowest grounds doctrine that take account of the doctrinal paradox, see Stearns (2000, pp.124–139) and Williams (2017).

[19]Murrill (2018) provides a good introduction to *stare decisis*, its history, and the reasons that the Supreme Court has appealed to when overturning constitutional precedents. The Supreme Court has been more reluctant to overturn precedents concerning statutes. Farber and Sherry (2009, Chapters 7–8)

5. The Precedent-Based Voting Paradox

Stare decisis plays a fundamental role in the decision-making of the Supreme Court. The arguments used by the justices to support their positions consider the applicability of holdings in prior cases that might serve as precedents for the case at hand. The existence of a precedent raises three further dispositive issues: (1) Is the precedent good law? (2) Does the precedent apply to this case? (3) Should the Court uphold the precedent? Legal doctrine requires an affirmative answer to the third question if and only if the first two questions are answered affirmatively. In the event that the Court answers yes to the first two questions and no to the last, there is what Cohen calls a *precedent-based voting paradox*.[20] An illustration of this paradox is provided in Example 2.

Example 2. To facilitate the comparison with the doctrinal paradox, the three questions enumerated above are first reformulated as propositions. They are:

p**:** The precedent is good law.

q**:** The precedent applies to this case.

r**:** The precedent should be upheld in this case.[21]

The relevant legal doctrine has the conjunctive biconditional form given in (2), $p \wedge q \leftrightarrow r$.

The judgments of the nine justices are exhibited in Table 2. The first four justices

	The precedent is good law. (p)	The precedent applies to this case. (q)	The precedent should be upheld. (r)
Justices 1–4	affirm	affirm	affirm
Justices 5–7	affirm	deny	deny
Justices 8–9	deny	affirm	deny
Majority	affirm (7-2)	affirm (6-3)	deny (5-4)

Table 2: Cohen's Precedent-Based Voting Paradox

determine that the precedent is good law and that it applies to the case at hand, so

provide an insightful analysis of the arguments for and against adherence to *stare decisis*, concluding that the arguments against are not compelling. They also consider what it means to follow a precedent and note the importance of non-judicial precedents, such as those provided by the writings of the Founding Fathers.

[20]The justices of the Supreme Court do not hold votes to determine the answers to the first two questions, so it would be more appropriate to refer to this paradox as being one of judgment aggregation rather than of voting. For consistency with Cohen (2010), we retain Cohen's terminology.

[21]More precisely, the three propositions are: (p) The precedent should not be overruled. (q) The holding in the precedent applies to this case. (r) The holding in the precedent should dictate the Court's holding in this case. For simplicity, we use the simpler formulations in the text, but it should be borne in mind that they are short-hand expressions for their more precise statements.

by applying the legal doctrine (2), they also determine that the precedent should be upheld in this case. The remaining justices determine that either the precedent is not good law or that it should be overturned, and so do not support applying it to this case. The Court uses the case-based method of adjudication and therefore adopts the latter position. However, if the issue-based method had been used instead, the precedent would have been upheld. Note that the exact distribution of the justices between the three rows in Table 2 do not matter so long as the justices in row 1 hold the minority judgment on r and they are part of the majority on both p and q.

Example 2 has exactly the same structure as the doctrinal paradox in its conjunctive biconditional form. Therefore, it is not, strictly speaking, a new paradox. Rather, it is a particular instantiation of the doctrinal paradox. Nevertheless, it is worthwhile to single out precedent-based voting paradoxes for special consideration.

The doctrinal paradox requires there to be at least two dispositive issues in addition to the issue that the court needs to rule on. However, in some Supreme Court cases, there appears to be only one other issue—whether a precedent should be upheld. Cohen contends that matters of precedent are never so simple because deciding whether to uphold a precedent requires determining dispositions on two other issues: (1) whether the precedent is good law and (2) whether the precedent applies to the case at hand. For this reason, there may be a doctrinal paradox lurking in the background even though there are seemingly insufficient issues being considered for it to occur. Consequently, as Cohen notes, Supreme Court voting paradoxes may occur more frequently than previously had been thought.

In Example 2, a judgment in the case involves determining whether the precedent should be upheld. This departs from the way that Cohen (2010) initially describes his paradox. He frames the question to be decided in terms of the issue for which a decision about a possible precedent is sought, not about whether the precedent should be upheld. Nevertheless, for the case Cohen uses to introduce his precedent-based voting paradox, the ruling on whether the precedent should be upheld amounts to making a ruling on the issue before the Court. This difference is not consequential. Nor is it consequential whether a precedent-based voting paradox employs a material conditional or biconditional conjunctive legal doctrine.

In order to illustrate these claims, we present the salient features of Cohen's original example of a precedent-based voting paradox in Example 3.

Example 3. In *Hein v. Freedom from Religion Foundation, Inc.*, the Supreme Court had to determine whether the defendant has standing to challenge certain governmental expenditures on the basis that they violate the Establishment Clause of the U.S. Constitution (which proscribes Congress from establishing laws respecting the establishment of a religion).[22] In order to rule on this case, the justices had to determine whether to apply the holding on standing in *Flast v. Cohen*, which challenged the constitutionality

[22] 551 U.S. 587 (2007).

of certain educational expenditures.[23] A key distinction between the two cases is that the expenditures that are the subject of litigation in *Flast* are authorized by the legislature branch of government, whereas the expenditures being litigated in *Hein* are authorized by the executive branch. The question then amounts to whether taxpayers have standing to challenge executive expenditures based on a precedent giving them standing to challenge legislative expenditures.

The three propositions under consideration are:

p**:** *Flast* is good law.

q**:** *Flast* applies to *Hein*.

r**:** The defendant has standing in *Hein*.

The first two propositions simply particularize the statements of p and q in Example 2 to the case at hand. However, r is now reformulated as a proposition about the standing of the defendant rather than about whether the precedent should be upheld. Because the defendant may be granted standing in *Hein* for some reason different from the precedent in *Flast*, the legal doctrine is the conjunctive material conditional in (1), $p \wedge q \rightarrow r$.

The judgments of the nine justices are exhibited in Table 3.[24] The majority decision

Opinion author and the number of justices joining	*Flast* is good law. (p)	*Flast* applies to *Hein*. (q)	The defendant has standing in *Hein*. (r)
Souter (4)	affirm	affirm	affirm
Alito (3)	affirm	deny	deny
Scalia (2)	deny	affirm	deny
Majority	affirm (7-2)	affirm (6-3)	deny (5-4)

Table 3: The Judgments in *Hein*.

denies standing even though the opposite conclusion would have been reached had the legal doctrine been applied to the majority opinions on the two propositions concerned with *Flast*. The justices fracture on the reasons for this disposition. Chief Justice Roberts and Justice Kennedy joined Justice Alito in the plurality opinion, whereas only Justice Thomas joined Justice Scalia in the concurrence. Justices Breyer, Ginsburg, and Stevens joined Justice Souter in the dissent.

Judging that the defendant has standing in the case described in Example 3 amounts to deciding that the precedent should be upheld. Moreover, because only the material conditional part of the legal doctrine is appealed to in Example 2 and the pattern of judgments is the same in both examples, they are essentially both instantations of the same voting paradox.

[23] 392 U.S. 83 (1968).

[24] This table is adapted from the one Cohen (2010, p. 211) uses to illustrate this case.

However, it could be that the ruling on an issue before the Court cannot be inferred from a plurality opinion on some issue of precedent. For example, as in *Hein*, it may be case that the Court needs to determine if a precedent about standing applies to the present case. If that is affirmed, then the Court has to make a further ruling on the case presented to it. Conditional on finding the petitioner to have standing, in general, the ruling could go for or against that party. Consequently, if p and q are as in Example 2, in order for there to be a precedent-based voting paradox, proposition r needs to be that the precedent is upheld (as in Example 2) or it must be logically entailed by the ruling on the precedent.

As noted earlier, the Court's decision on a case can depend on the procedures used to make a ruling, not just on matters of law and history. The doctrinal paradox and its precedent-based voting paradox special case highlight the fact that the Court's decision can depend on whether the case-based or issue-based method of adjudication is used. *Hein* provides an illustration of this observation.

6. *Coleman* as a Precedent-Based Voting Paradox

Cohen found eleven instances of the precedent-based voting paradox described in Example 2 in the historical record of Supreme Court rulings (Cohen, 2010, Appendix). A sequential procedure was used to identify them. First, he searched Westlaw's Supreme Court database for cases that do not have a majority opinion. Second, he searched the text of the opinions in those cases for words or phrases that suggest that the overruling of a precedent was considered. He then read the cases that survived this filtering procedure to determine which of them exhibits a precedent-based voting paradox.

Using a similar procedure, we have found what is possibly an additional instance of the precedent-based voting paradox in cases that the Supreme Court issued rulings on between 2010 and 2018: *Coleman v. Court of Appeals of Maryland*. The ruling on this case was issued in March 2012. Whether this case is a genuine instance of this paradox depends on how the concurrence written by Justice Scalia is interpreted. We provide a plausible interpretation of Justice Scalia's position that, if endorsed, supports our view that the judgments expressed in *Coleman* instantiate the precedent-based voting paradox.

Coleman was identified using Release 2 of the 2018 edition of the Supreme Court Modern database (Spaeth et al., 2018).[25] For a precedent-based voting paradox to occur, there must be a majority of the justices who dissent from the ruling or concur with it for reasons different from those expressed by the plurality. Such cases must be among the ones included in Decision Type 7 ("less than a majority of the participating justices agree with the opinion produced by the justice assigned to write the Court's opinion") in the dataset entitled "Cases Organized by Issue/Legal Provision Including Split Votes."

[25]This database and its companion Supreme Court Legacy database are now the standard sources for analyzes of Supreme Court rulings. When Cohen's article appeared, this database only covered decisions made in the preceding thirty years, and so could not be used to analyze the complete history of Supreme Court rulings.

For the period being considered, nineteen cases survived this filter. The opinions in each of these cases were reviewed and only *Coleman* was found to plausibly exhibit a precedent-based voting paradox.[26]

Coleman concerns whether the petitioner, Daniel Coleman, had standing to sue his employer, the Maryland Court of Appeals (a state entity), for an alleged violation of the leave provisions of the Family and Medical Leave Act of 1993 (FMLA).[27] The FMLA was enacted so as to ensure that covered employers do not engage in gender discrimination in the design and implementation of the leave policies for eligible employees that apply to certain family or medical situations.

In general, States are treated as sovereigns, and so cannot be sued for damages. However, Congress using its powers granted under § 5 of the Fourteenth Amendment to the U.S. Constitution may by statute grant exceptions to this general principle so as to enforce the other parts of this Amendment (in particular, its equal protection provision). What is at issue in *Coleman* is whether such an exception applies in Coleman's circumstances.

In his opinion writing for the plurality in *Coleman*, Justice Kennedy summarized the leave provisions of the FMLA and the rights of an employee to sue his or her employer if there is an alleged violation of these leave provisions:

> The Family and Medical Leave Act of 1993 (FMLA or Act) entitles eligible employees to take up to 12 work weeks of unpaid leave per year. An employee may take leave under the FMLA for: (A) "the birth of a son or daughter ... in order to care for such son or daughter," (B) the adoption or foster-care placement of a child with the employee, (C) the care of a "spouse ... son, daughter, or parent" with "a serious health condition," and (D) the employee's own serious health condition when the condition interferes with the employees ability to perform at work. 29 U.S. C. 2612(a)(1). The Act creates a private right of action to seek both equitable relief and money damages "against any employer (including a public agency) in any Federal or State court of competent jurisdiction." 2617(a)(2).[28]

(A), (B), and (C) are the *family-care provisions* and (D) is the *self-care provision*.

The constitutionality of provision (C) was addressed in *Nevada Department of Human Resources v. Hibbs*.[29] In the opinion setting out the ruling on this case, Chief Justice Rehnquist determined that "the States' record of unconstitutional participation in, and fostering of, gender-based discrimination in the administration of leave benefits is weighty enough to justify the enactment of prophylactic § 5 [of the Fourteenth Amendment] legislation."[30] In other words, this provision of the Act is constitutional and, therefore, Hibbs had standing to sue a state entity.

[26]The analysis of the database and the nineteen cases was carried out by Sarah Friedman.
[27]129 U.S.C. § 2601 et. seq. (1993).
[28]56 U.S. 30 (2012) at p. 34.
[29]538 U.S. 721 (2003).
[30]538 U.S. 721 (2003) at p. 735.

The ruling in *Hibbs* concerned one of the family-leave provisions of the FMLA. At issue in *Coleman* is the self-care provision (D). In his opinion, Justice Kennedy wrote that "Congress must identify a pattern of constitutional violations and tailor a remedy congruent and proportional to the documented violations. It failed to do so when it allowed employees to sue States for violations of the FMLA's self-care provision."[31] Consequently, this provision of the FMLA was ruled to be unconstitutional and, therefore, Coleman had no standing to sue for remedies under it.

The propositions under consideration in *Coleman* are analogues of the ones considered in *Hein*. They are:

p**:** *Hibbs* is good law.

q**:** *Hibbs* applies to *Coleman*.

r**:** The petitioner has standing in *Coleman*.

As in *Hein*, the legal doctrine is the conjunctive material conditional in (1), $p \wedge q \rightarrow r$. An affirmation of r is equivalent to ruling that the precedent in *Hibbs* extends to *Coleman* and, hence, affirms the constitutionality of the self-care provision of the FMLA.

All nine justices participated in the decision on Coleman's petition. Each of them expressed his or her disposition of the case explicitly in the opinion, a concurrence, or a dissent. Thus, the judgments about whether Coleman has standing can be read from the record by seeing who affirmed and who denied the petition.

We have identified the judgments on the two issues—the validity of *Hibbs* and whether it serves as a precedent for *Coleman*—based on the rationales offered for the justices' dispositions of the case and on what Justice Scalia has written elsewhere about his general jurisprudential views. We have determined that the judgments of the nine justices are the ones exhibited in Table 4.

Opinion author and the number of justices joining	*Hibbs* is good law. (p)	*Hibbs* applies to *Coleman*. (q)	The petitioner has standing in *Coleman*. (r)
Kennedy (3)	affirm	deny	deny
Thomas (1)	deny	deny	deny
Ginsburg (4)	affirm	affirm	affirm
Scalia (1)	deny	affirm	deny
Majority	affirm (7-2)	affirm (5-4)	deny (5-4)

Table 4: The Judgments in *Coleman*.

The judgments in Table 4 indicate that *Coleman* is an example of the precedent-based voting paradox. As in all Supreme Court adjudications, the disposition of the case is determined by the case-based method. Based on the majority judgments of the

[31] 56 U.S. 30 (2012) at pp. 43–44.

justices, Coleman was denied standing. If, instead, the issue-based method was used, because there are separate majorities who believe that *Hibbs* is good law and that it sets a precedent for *Coleman*, by the legal doctrine $p \wedge q \rightarrow r$, Coleman would have been granted standing. Thus, the outcome in *Coleman* depends on whether case-based or issue-based adjudication is used.

Justice Kennedy was joined in the plurality opinion by Chief Justice Roberts and Justices Alito and Thomas. Justice Thomas did not agree with the other justices in the plurality about whether *Hibbs* is constitutional, so he wrote a separate concurrence. Justice Scalia also wrote a separate concurrence because, while agreeing with the disposition of the case, he disagreed with the rationale. Justice Ginsburg wrote a dissent, and was joined by Justices Breyer, Sotomayor, and Kagan.[32]

7. The Evidence for the Judgments in *Coleman*

We now turn to the evidence in support of the judgments that we have attributed to the nine justices in *Coleman*.

Writing for the plurality, Justice Kennedy set out the gender discrimination basis for the ruling in *Hibbs*, thereby endorsing it.[33] However, he concluded that the constitutionality of the family-leave provisions of the FMLA does not extend to the self-care provision:

> But what the family-care provisions have to support them, the self-care provision lacks, namely, evidence of a pattern of state constitutional violations [based on gender discrimination] accompanied by a remedy drawn in narrow terms to address or prevent those violations.[34]

While Justice Thomas concurred with the plurality that the constitutionality of the family-leave provisions of the FMLA does not extend to the self-care provision, his view is "that *Hibbs* was wrongly decided because the family-care provision is not sufficiently linked to a demonstrated pattern of unconstitutional discrimination by the States."[35]

Justice Ginsburg in her dissent says:

> The FMLA's purpose and legislative history reinforce the conclusion that the FMLA, in its entirety, is directed at sex discrimination. Indeed, the FMLA was originally envisioned as a way to guarantee—without singling out women or pregnancy—that pregnant women would not lose their jobs when they gave birth. The self-care provision achieves that aim.[36]

[32]The latter two justices noted a dissent with one footnote in Justice Ginsburg's dissent.
[33]56 U.S. 30 (2012) at pp. 34–35.
[34]56 U.S. 30 (2012) at p. 35.
[35]56 U.S. 30 (2012) at p. 44. Justice Thomas dissented in *Hibbs*.
[36]56 U.S. 30 (2012) at p. 47.

On the basis of a detailed examination of the arguments for the leave provisions of the FMLA from historical, legislative, and jurisprudential perspectives, Justice Ginsburg made the case that the family-leave provisions of the FMLA are constitutional and that the gender discrimination considerations that supported the decision in *Hibbs* also apply to *Coleman*. We interpret Justice Ginsburg's dissent as providing her endorsements of *Hibbs* and of *Hibbs* serving as a precedent for *Coleman*.

Because Justice Scalia did not clearly articulate his views about all of the dispositive issues in *Coleman*, it is necessary to consider the justifications for the judgments we have attributed to him in Table 4 in much more detail than we have done for the other justices. In his concurrence, Justice Scalia states that, except when racial discrimination is involved, he favors very strict limits on congressional enforcement powers under § 5 of the Fourteenth Amendment. It is clear from his concurrence that Justice Scalia believes that *Hibbs* is not good law.[37] However, he does not explicitly comment on whether *Hibbs* applies to *Coleman*. We shall argue that there are reasons to believe that had he done so, he would have endorsed the conditional statement: If *Hibbs* is good law, then it sets a precedent for *Coleman*.

As we have previously noted, when the legal doctrine has the conjunctive form (1), to deny r, it is sufficient to deny one of p or q; it is not necessary to state a view on both issues. Thus, in *Coleman*, Justice Scalia did not need to state his views on the applicability of the holding in *Hibbs* in order to justify his conclusion that the petitioner has no standing in *Coleman*. By adopting the position that *Hibbs* is not good law, it is moot whether its holding applies to *Coleman*. Nevertheless, there was nothing to prevent Justice Scalia from expressing his view on this issue; he chose not to do so.

While Justice Scalia's position on this issue is moot, there may be a reason why he did not address it in his concurrence. For *Coleman* to be an instantiation of Cohen's precedent-based voting paradox, it is necessary to attribute to Justice Scalia the view that *Hibbs* applies to *Coleman*, as we have done. One could conjecture, as Post and Salop (1992, pp. 755–758) do in their analysis of Justice Scalia's concurrence in *Hoffman*, that he did not want to make salient that case-based and issue-based adjudications would result in different outcomes had he done so. Of course, this is merely speculative; nothing in Justice Scalia's concurrence provides information one way or the other that he behaved strategically in *Coleman*.

In his concurrence in *Coleman*, Justice Scalia alludes to his well-known antipathy to "judicial arbitrariness and policy-driven decisonmaking."[38] One might then infer that in order to avoid arbitrariness, he should affirm the proposition that *Hibbs* applies to *Coleman* because the relevant principles and facts are the same in both cases. Of course, he did not endorse the premise in this proposition. This argument is not conclusive, so we must look elsewhere to make a less speculative inference about what Justice Scalia's position on this issue was. To do this, we draw on what he has written about his

[37] 56 U.S. 30 (2012) at p. 45.
[38] 56 U.S. 30 (2012) at p. 44.

jurisprudence in Scalia (1989, 2018).[39]

Justice Scalia is a self-styled originalist. Specifically, he subscribes to the version of originalism known as textualism. In this approach to constitutional and statutory interpretation, the interpretation of constitutional provisions and statutes is determined by the public meaning of the texts of these documents at the time of their adoption. In Justice Scalia's view, intent and legislative history play no role in matters of judicial interpretation.[40] Thus, he rejects the approach to matters of interpretation employed in Justice Ginsburg's dissent.

Farber and Sherry (2002, p. 49) convincingly argue that "[d]espite its centrality in his thinking about judicial review, originalism plays a limited role in some of Justice Scalia's most notable opinions." They quote Justice Scalia (2018, pp. 138–139) as saying:

> Originalism, like any other theory of interpretation put into practice in an ongoing system of law, must accommodate the doctrine of *stare decisis*; it cannot remake the world anew. It is of no more consequence at this point whether the Alien and Sedition Acts of 1798 were in accords with the original understanding of the First Amendment than it is whether *Marbury v. Madison* was decided correctly.[41]

Farber and Sherry (2002, p. 54) contend that

> [i]nstead of originalism, [Justice Scalia] has tended in practice to invoke entrenched interpretations of constitutional provisions by either the Court itself or by long-standing public consensus.

This qualified respect for precedent provides some support for our conjecture that had Justice Scalia regarded *Hibbs* as being good law (which he does not), then he would have also regarded it as being a precedent for *Coleman*.[42] This is not to say that Justice Scalia was averse to overturning precedents; he was not. When there was little cost

[39]Scalia (2018) includes a lengthy essay by Justice Scalia that sets out his views on statutory and constitutional interpretation. His essay first appeared in the original 1997 edition of this volume. Both editions contain valuable commentaries by a number of scholars. There is an extensive literature that critically evaluates Justice Scalia's jurisprudence and the decisions he has made as an Associate Justice of the Supreme Court. Sullivan (1992) and Farber and Sherry (2002, Chap. 6) provide particularly good introductions to this jurisprudence. See also Farber and Sherry (2009, Chaps. 7–8).

[40]See, for example, Scalia (2018, pp. 31–32).

[41]See also Scalia (2018, p. 7). *Marbury v. Madison* (5 U.S. (1 Cranch) 137 (1803)) is the case that established the principle of judicial review, the principle that courts can strike down laws and statutes that they regard as being unconstitutional.

[42]However, we should note a caveat to this claim. According to Farber and Sherry (2002, p. 52):

> The axiom that Scalia endorses, as we understand it, seems to be that constitutional interpretations that have been universally accepted for sufficiently long periods of time are binding on the Court. He has not, however, explained the basis for this axiom.

Hibbs was only decided nine years before *Coleman* and that may not be "a sufficiently long period of time" for it to be binding even it is not good law.

to overturning what in his view was a bad precedent, Justice Scalia did not regard the precedent as binding.[43]

Justice Scalia's jurisprudence is based on the premise that "the rule of law is a law of rules."[44] This premise is grounded on the distinction between legal directives that are rules and those that are standards. Sullivan (1992, pp. 58–59, footnotes omitted) describes this distinction as follows:

> A legal directive is "rule"-like when it binds a decisionmaker to respond in a determinate way to the presence of delimited triggering facts. Rules aim to confine the decisionmaker to facts, leaving irreducibly arbitrary and subjective value choices to be worked out elsewhere. ... A legal directive is "standard"-like when it tends to collapse decisionmaking back into the direct application of the background principle or policy to a fact situation. Standards ... [give] the decisionmaker more discretion than do rules. ... Thus, the application of a standard in one case ties the decisionmaker's hand in the next case less than does a rule—the more facts one may take into account, the more likely that some of them will be different the next time.

While the use of some discretion is unavoidable, in Justice Scalia's view its use should be quite limited in order for legal directives to be as rule-like as possible.[45]

In addition to respecting precedents and according priority to constitutional and statutory texts, discretion can be limited by appealing to the fundamental values that underly the Constitution. One such value is equal treatment. Justice Scalia (1989, p. 1178) says:

> The Equal Protection Clause epitomizes justice more than any other provision of the Constitution. And the trouble with the discretion-conferring approach to judicial law making is that it does not satisfy this sense of justice very well.

Justice Scalia's disdain for judicial discretion and the centrality of the Constitution's equal treatment provision in his jurisprudence provide further grounds for believing that he would have applied the precedent in *Hibbs* to *Coleman* had he thought that *Hibbs* was good law. To distinguish the situations of the individuals seeking standing in *Hibbs* and *Coleman* from each other would seem to epitomize the use of judicial discretion.

If our attribution to Justice Scalia of the view that *Hibbs* serves as a precedent for *Coleman* is incorrect, then the entries in Table 4 for both his judgment and the majority judgment for this proposition would need to be changed. Then, both the issue-based and case-based methods of adjudication would deny Coleman standing and, hence,

[43] See Farber and Sherry (2009, p. 64).

[44] This is the title of Scalia (1989).

[45] In discussing the use of tradition in Justice Scalia's jurisprudence, Farber and Sherry (2002, p. 49) say that "he sees tradition and originalism as alternative means to the same end: expunging judicial discretion." Similarly, Sullivan (1992, p. 78) says that "for Justice Scalia, the rule's the thing; originalism and traditionalism are means, not ends."

there would be no precedent-based voting paradox. For this reason, we merely claim that *Coleman* is arguably an instantiation of this paradox, rather than claiming that it definitely is one. This equivocation may be unavoidable when, as in *Coleman*, the judgment on an issue only has the support of a bare majority and one or more of the justices' positions on it are uncertain.

8. Preference Aggregation in Judicial Adjudication

Beginning with Spitzer (1979) and Easterbrook (1982), adjudication in collegial courts has also been analyzed in terms of preference aggregation, as in Arrovian social choice theory (Arrow, 1951).[46] In this approach, the preferences of the judges are aggregated into a collective preference or are used to determine a collective choice. With preference aggregation, each judge has preferences over the available alternatives expressed in terms of pairwise preference comparisons. In contrast, with judgment aggregation, each judge makes a judgment concerning the acceptability of each alternative considered separately.[47]

Both Spitzer and Easterbrook argue that the axioms employed in Arrow's Theorem (Arrow, 1951), or some closely related variants of them, have normative appeal when applied to decision-making in collegial courts. However, Arrow's Theorem implies that it is impossible to satisfy all of his axioms. Because no preference aggregation procedure is ideal, judicial decision-making (when viewed as a problem in preference aggregation) necessarily exhibits pathological features. For example, Easterbrook notes that the decisions of a court may cycle, exhibit path dependency, or be subject to strategic manipulation.

Kornhauser and Sager (1986, p. 109, ft. 37) argue that Arrow's Theorem is irrelevant when the decisions facing a court are dichotomous (the case being considered here) because this theorem requires that there are at least three alternatives under consideration. This conclusion is not warranted because, as noted by Stearns (2000, pp. 102–106), the alternatives can be thought of as being the bundles of dispositions of the issues expressed in the judges' opinions rather than as the possible dispositions of the case. In *Hein*, there are three issue bundles corresponding to the three ways that the issues p and q are disposed: (A) $p \wedge q$, (B) $p \wedge \neg q$, and (C) $\neg p \wedge q$. Each of these issue bundles determines a disposition of the case using the material conditional legal doctrine (1).[48]

Cohen (2010, pp. 211–212) argues that *Hein* can also be viewed as a preference

[46] Stearns (2000) provides a detailed analysis of Supreme Court decision-making from this perspective.

[47] One of the main theses advanced by Stearns (2000, p. 98) is that even if judges prefer to advance their own views rather than to provide reasoned judgments, social choice theory can be be used to help explain "the emergence of several institutional practices that, individually and in combination, operate to constrain justices, thus promoting judgment-based decision making both in individual cases and across a larger number of cases."

[48] Dietrich and List (2007) note that the statement that x is preferred to y can be modeled in terms of a dichotomous judgment. Transitivity of preference then expresses a logical connection between judgments on such propositions. Hence, Arrovian preference aggregation can be thought of as being a special case of judgment aggregation.

aggregation voting paradox. He suggests that it is plausible for the justices' preferences over the three issue bundles to exhibit the pattern found in the Condorcet paradox, and that this would result in a voting cycle.[49] Nevertheless, the Court must issue a ruling and according to Cohen (2010, p. 199), "it does so in an irrational manner by choosing an outcome that is not consistent with the majority resolutions of the multiple issues before the Court."

Cohen does not specify a preference aggregation version of his precedent-based voting paradox in as much detail as he does for his judgment aggregation voting paradox. However the details are spelled out, it may be more difficult to identify instances of the former paradox than the latter. The judgment aggregation version of the paradox only requires knowledge of the justices' judgments on each of the dispositive issues (i.e., which of the issue bundles is most preferred). In contrast, the preference aggregation version of the paradox requires a preference ranking of all of the issue bundles. These preferences may be difficult to discern even if it is possible to determine the justice's judgments on every issue.

Note that it is not necessary to have a complete preference ranking in order to determine which outcome a justice supports, that only requires knowing his or her judgments about the dispositive issues. Nevertheless, knowledge of these preferences and why they are held may aid in understanding why a justice supports a particular outcome. This knowledge could be quite useful in evaluating the performance of the Court and in making predictions about how it will likely rule in future cases.

9. Concluding Remarks

The example (Example 1) used to illustrate the doctrinal paradox deals with collegial decision-making within a single case. However, decision-making in the Supreme Court is a dynamic process, and the coherence of constitutional doctrine depends on the rulings in distinct cases adjudicated at different times being determined by a unified set of principles. Or, as Kornhauser and Sager (1986, p. 105) put it, "[a] perfectly coherent legal system would comprise normative elements derivable from a relatively limited number of non-contradictory premises that are reasonably general in form and that join in a recognizable conception of social policy." The precedent-based voting paradox is dynamic in the sense that it is concerned with how two related cases are decided. However, it merely addresses the question of whether the judgments are consistent in the sense of being free from contradiction. It does not address the question of whether a coherent conception of the law underlies the decisions in the two cases. A different kind of analysis would be required for that purpose.[50]

[49] Cohen (2010, pp. 215–217) also analyzes the justice's preferences in *Hein* in terms of the preference structures identified in Stearns (2000, pp. 71–77) as underlying voting cycles. See also Stearns (1999, pp. 121–123).

[50] See Kornhauser and Sager (1986) for an extended discussion of the distinction between consistency and coherence as these concepts apply to judicial judgment aggregation. Stearns (2000) explores how

In the doctrinal and precedent-based voting paradoxes, it is supposed that the issues that are relevant to consider in order to reach a ruling on a case are commonly agreed upon by the justices. Relatedly, there may be a question of which legal doctrine to apply and whether the choice of doctrine is an issue that should be determined by taking into account the judgments of the justices.[51] Identifying what the underlying issues are is sometimes contentious.[52] The problem of issue identification is particularly acute for the precedent-based voting paradox if the body of doctrine relevant to the case at hand incorporates multiple precedents that are in tension with one another. Stearns (2020) documents a number of seemingly contradictory precedents and offers an explanation for why they may nevertheless persist over time. In both *Hein* and *Coleman*, the problem of conflicting premises does not arise because it is clear that there is only a single precedent that needs to be considered.

When the case-based method of adjudication is employed to deal with a precedent, it has been supposed that each justice uses his or her own determination of whether the precedent is good law and of whether it applies to the case at hand when reaching a judgment about the case. Sherry (1998, p. 855) raises the following question: "Should a Justice who disagrees with a majority of the Court nevertheless accept the majority's holding as defining the law for purposes of establishing a baseline for subsequent questions?" If the answer to this question is in the affirmative, then for *the purpose of making individual judgments about the ruling in the case*, the majority judgment about the precedent should be used rather than the justices' own judgments. If this is done, then the judgments of Justices Scalia and Thomas in both *Hein* and *Coleman* about the holding in the precedent case would be reversed and there would be no precedent-based voting paradox.[53]

The doctrinal and precedent-based voting paradoxes illuminate the possible conflict between case-based and issue-based methods of Supreme Court judicial adjudication. Which method should be adopted has been the subject of a lively debate. Rogers (1996) and Stearns (2000) endorse the case-based method, whereas Post and Salop (1992) endorse the issue-based method. Kornhauser and Sager (1993) and Kornhauser (2008) have a more nuanced position, proposing that the choice should be context sensitive.[54] Nash (2003) provides a detailed discussion of the pros and cons of these proposals and offers a context-sensitive proposal of his own as a substitute for that of Kornhauser and Sager. Mongin (2019, pp. 426–427) suggests that the arguments supporting these proposals confuse issues that are conceptually distinct. As a consequence, he concludes that "much remains to be done in order to produce a decent set of normative considerations and

legislative practices for adjudicating single cases and groups of cases can be explained by social choice considerations.

[51]See Kornhauser (2008, p. 16) and Mongin (2019, p. 428).

[52]See, for example, Kornhauser (1992) and Stearns (2000, pp. 110–124) for discussions of issue identification in the context of judgment and preference aggregation by collegial courts.

[53]Sherry (1998) provides three arguments in support of the baseline approach.

[54]Stearns (2000, p. 350, ft. 2) summarizes the positions taken by the authors cited above about this issue.

weigh them against each other to decide between the two methods."

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