

ILLUSTRATING SWING VOTES II: UNITED STATES SUPREME COURT

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I. INTRODUCTION

Can we see how different the 5–4 majorities of the United States Supreme Court are? What is the number of swing votes connecting them and their relative importance?

In a previous article in this journal, we developed a method for displaying the swing votes of a supreme court, the (tight) majorities they connect, and the opinions those majorities issue.¹

We apply our method to compositions of the United States Supreme Court after 1946 that have over 50 tightly split opinions: the compositions of the court defined by its junior justice being Vinson, Stewart, Powell, Stevens, O'Connor, Kennedy, Breyer, Alito, and Kagan.

This look at 5–4 coalitions and swing votes primarily reveals an ebb and flow of a tide of a judicial practice we call *fluidity*, which corresponds to the flexibility or variability with which justices of a supreme court form tight coalitions. The graphs allow us to observe the number of coalitions, their opinions, and swing votes. Fluidity reaches its high point during the composition defined by Stevens as the junior justice, i.e. from 1975 to 1981. Its adjacent compositions, Powell's (1972–75) and O'Connor's (1981–86), are similar. However, the recent compositions, defined by the junior justices being Alito (2006–09) and Kagan (2010–16), differ. Those appear similar to the early ones, defined by Vinson (1946–49) and Stewart (1958–62). Whereas we focus on the graphical representation of 5–4 coalitions and swing votes, several additional phenomena follow the same pattern.

The graphs of the compositions that exhibit high fluidity are different in having more coalitions (9 to 11), linked by more swing votes (in the teens), with those coalitions being closer to proportional in the number of opinions that they issue. The graphs of the coalitions with low fluidity display few coalitions (3 or 4), few swing votes (2 or 3), and even fewer, usually two, coalitions doing the lion's share of issuing opinions. Additionally, the index of fluidity follows that pattern, reaching 0.57 for the most fluid composition of Stevens but being around

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1. Nicholas Georgakopoulos & Frank Sullivan, Jr., *Illustrating Swing Votes I: Indiana Supreme Court*, 53 IND. L. REV. 95 (2020).

0.30 for the least fluid ones.² The issuance of opinions with a political slant opposite to the majority of opinions of that coalition, what we call *contraslanted* opinions, again has a high during the fluid compositions (from 2.5 percent to 5 percent compared to 0 percent to 2 percent in the less fluid ones). We speculate about the causes of this phenomenon: how it might relate to the composition of the court by the justices' appointing party but fails to do so.

Secondarily, this analysis reveals the limitations of attempts to fit supreme court adjudication in locational models, especially the median voter theorem. The strongest discrepancies with the median voter theorem are that (1) often the most active swing vote is not the justice who according to the ideological rankings is the median; (2) justices far from the median can be the second most active swing vote; and (3) the busiest swing vote changes without a change of the median justice. Moreover, even a multi-dimensional locational model cannot remain accurate because adjudication makes new factors become important, what from the perspective of locational models would correspond to the creation of new dimensions. We offer the *Apprendi* line of cases and the uniqueness of its coalition as an example of a creation of a new dimension that could not have been anticipated.³

For the related literature, we refer to our prior article.

Our approach stands in contrast to attempts to identify a single justice as the swing vote to the extent that we reveal all the swing votes of each court.⁴ Notably, our approach reveals Scalia and Thomas to be significant swing votes despite not being in the ideological middle of the court.

II. THE DATA

We use the vote-centered database of the SupremeCourtDatabase.org to identify all 5–4 opinions and ignore opinions where less than nine justices voted.⁵ The version of the database that we used covers the years 1946 to 2016. The database codes each vote on each issue in each opinion.⁶ We ignore the issues that

2. Frank Sullivan, Jr., Nicholas L. Georgakopoulos, & Dimitri Georgakopoulos, *The Fluidity of Judicial Coalitions: A Surprising Look at Coalitions within the Supreme Courts of the United States and Indiana*, JUDICATURE, Autumn 2016, at 34, 36 (developing the index of fluidity).

3. See text accompanying notes 22–23 and Appendix A, text accompanying notes 27–37.

4. The two illustrations of ideological positions of justices that stand out are from Martin & Quinn and Bailey, with additional such graphics in other publications by Bailey. See Andrew D. Martin & Kevin M. Quinn, *Dynamic Ideal Point Estimation via Markov Chain Monte Carlo for the U.S. Supreme Court, 1953–1999*, 10 POL. ANAL. 134 (2002); Michael A. Bailey, *Measuring Court Preferences, 1950–2011: Agendas, Polarity and Heterogeneity* (Working Paper, August 2012). See also Wikipedia, *Ideological Leanings of U.S. Supreme Court Justices* (as of Sept. 28, 2017) [<https://perma.cc/7LCZ-K6HM>] [hereinafter *Ideological Leanings*].

5. *The Supreme Court Database*, WASH. U. L. (Sept. 13, 2019), supremecourtdatabase.org/data.php [<https://perma.cc/ZN48-4BWN>].

6. *Id.* The supremecourtdatabase.org codes the votes of each justice on each issue of each dispute with a value from 1 to 8. A value of 1 means the justice voted with the majority, 2 that the

produced other than 5–4 splits. Thus, we produce a single record for each opinion. We make the resulting data available online at <https://mckinneylaw.iu.edu/ilr/pdf/vol53p135.pdf> and produce tables of the opinions and their summaries in Appendix B. The database codes each outcome as liberal or conservative. We verify the database’s coding and rarely disagree with it.

III. THE GRAPHS

We illustrate the swing votes for the court’s compositions from 1946 to 2016 that produced more than fifty tightly split opinions. Those turn out to be its compositions defined by the junior justice being Vinson, Stewart, Powell,⁷ Stevens, O’Connor, Kennedy, Breyer, Alito, and Kagan. Figures 1 through 9 are the results. Because the data of the United States Supreme Court do not allow as deterministic a construction as did the Indiana data in our previous article, our arrangement of the majorities is not fully objective.

justice dissented, 3 that the justice concurred, 4 indicates a special concurrence, 5 indicates the judgement of the court, 6 indicates dissent from a denial of certiorari or dissent from summary affirmation of an appeal, 7 indicates a jurisdictional dissent and 8 indicates an equally divided vote. We treat values of 1, 3, 4, and 5 as votes for the majority and values of 2, 6, and 7 as dissenting votes. We only count opinions, not disputes; i.e., when a single opinion adjudicates more disputes, we only count it once.

7. Whereas Rehnquist was appointed on the same day as Powell and is listed as the junior justice by the Supreme Court, we name this composition of the court after Powell to avoid confusion with popular usage of the phrase “Rehnquist court” to refer to the period of Rehnquist as the Chief Justice, which comprises several different compositions of the court.

Jr. Justice	Date Appointed	No of 5-4 Ops.	Earliest 5-4 op.	Latest 5-4 op.	Nominating President (Party)
Vinson	6/24/1946	83	11/1946	6/1949	Truman (D)
Clark & Minton	8/24/1949 10/12/1949	34	6/1950	5/1953	Truman (D)
Warren	10/05/1953	9	11/1953	4/1954	Eisenhower (R)
Harlan	3/28/1955	18	6/1955	10/1956	Eisenhower (R)
Brennan	10/15/1956	6	12/1956	2/1957	Eisenhower (R)
Whittaker	3/25/1957	39	4/1957	6/1958	Eisenhower (R)
Stewart	10/14/1958	84	12/1958	4/1962	Eisenhower (R)
White & Goldberg	4/16/1962 10/1/1962	41	11/1962	6/1965	Kennedy (D)
Fortas	10/4/1965	41	12/1965	6/1967	Johnson (D)
Marshall	10/2/1967	12	6/1968	6/1969	Johnson (D)
Burger	6/23/1969	4	12/1969	12/1969	Nixon (R)
Blackmun	6/9/1970	31	12/1970	6/1971	Nixon (R)
Rehnquist & Powell	1/7/1972 (both)	100	2/1972	6/1975	Nixon (R)
Stevens	12/19/1975	128	4/1976	6/1981	Ford (R)
O'Connor	9/25/1981	148	12/1981	7/1986	Reagan (R)
Scalia	9/26/1986	42	11/1986	6/1987	Reagan (R)
Kennedy	2/18/1988	89	4/1988	6/1990	Reagan (R)
Souter	10/9/1990	22	1/1991	6/1991	Bush I (R)
Thomas	10/23/1991	31	4/1992	6/1993	Bush I (R)
Ginsburg	8/10/1993	13	12/1993	6/1994	Clinton (D)
Breyer	8/03/1994	191	11/1994	6/2005	Clinton (D)
Roberts	9/29/2005	2	1/2006	1/2006	Bush II (R)
Alito	1/31/2006	67	5/2006	9/2009	Bush II (R)
Sotomayor	8/8/2009	17	1/2010	6/2010	Obama (D)
Kagan	8/7/2010	78	3/2011	6/2015	Obama (D)

Table 1. Appointment and duration data for compositions as defined by junior justices.⁸

Short tenures (of compositions that do not produce enough tightly split opinions for a meaningful graph) separate most compositions. However, the

8. When the table identifies two justices as the junior justices, they either are appointed on the same day, as are Rehnquist and Powell, or no 5-4 opinions appear under the first appointed justice's composition, as is the case with Clark and White.

compositions of Powell, Stevens, and O'Connor are in an uninterrupted sequence. This becomes clearer in Table 1.

Table 1 lists new justices by order of appointment over the period we study, 1946–2016. Each appointed justice, as the junior justice, defines a new composition of the court. The table has the date of appointment; the number of tightly split opinions; the dates of the earliest and the latest split opinions; and the nominating President and his party. In boldface are the rows of the justices who define compositions that issue enough, namely fifty, tightly split opinions for a graph.

We display each opinion as a curved triangle, like a very thin pizza slice, springing from the specific point that corresponds to its majority or, to restate, as a thick radius of a circle with its center at that majority. The result of several such triangles springing from a single majority is an angle defining a fraction of a circle with short lines separating the opinions of that majority. We set the largest such fraction of a circle to be slightly (5 percent) less than a semicircle in each figure. The result is that the size of the slice that corresponds to an opinion in each figure varies, depending on how many opinions the most prolific majority authored. For example, the slice corresponding to each opinion is much smaller in the Breyer court, where the most prolific majority issued eighty-six opinions,⁹ compared to the Stevens court, where the most prolific majority issued 19 opinions.¹⁰ The legend of each figure has the total number of 5–4 opinions being illustrated and the output of the most prolific majority. Appendix B lists the 5–4 opinions by majority, but again, only majorities authoring more than two opinions.

We also display the slice corresponding to each opinion as either in hexagonal shading or dark grey (blue or red in the online version), depending on whether its political slant is liberal or conservative. Our coding mostly agrees with that of SupremeCourtDatabase.org. The few disagreements are due to placing emphasis on different levels of the outcome. We usually focus on the outcome that is most material to the parties, but that may differ from the nature of the outcome on a more abstract level. For example, a liberal outcome for the parties, such as the upholding of a local tax, may be the result of a conservative policy of a more abstract level, such as the principle of delegating more powers to state and local authorities. Appendix B, which lists the opinions, their summaries, and their political slant, indicates when we disagreed with the database's coding.

The figures let us see the consistent members of the conservative and the liberal coalitions, the swing votes, and which of the swing votes are dominant in the sense of connecting majorities that issue a disproportionately great number of opinions. Also interesting is the changing number of coalitions into which the court splits. We discuss each court composition in turn. An interactive unified graphic with popups of the opinions and their summaries is available on the

9. *See infra* Figure 7.

10. *See infra* Figure 4.

web.¹¹

A. The Vinson Composition (1946–49)

The first composition, defined by the appointment of Chief Justice Vinson as the junior justice on June 24, 1946, by Democratic President Truman, consists entirely of justices appointed by Democratic presidents, two by President Truman (the other Truman appointee was Burton, a Republican) and all of the others by President F.D. Roosevelt. However, tightly split decisions still arise. The conservative side has as its core Vinson with Burton and Reed. The liberal side has as its core Black, Douglas, and Murphy.

The graph has three coalitions issuing 100 percent liberal opinions: at the eight o'clock, nine o'clock, and ten o'clock positions. By the short lines along the outside of each arc separating the opinions, we see those issue, respectively, three, seven, and four opinions. On the conservative side, the graph displays two active coalitions, at two o'clock issuing three opinions and at three o'clock issuing thirty-three opinions. The number of opinions of the most prolific coalition drives the size of the arc that corresponds to each opinion. The most prolific coalition turns out to always be a conservative one and is usually at three o'clock. Its output is set to be 5 percent less than a semicircle. The unoccupied dots in the circle correspond to majorities that never formed or only formed to issue one or two opinions, which we do not display. The total number of points in the circle, 126, corresponds to the number of five-member majorities that are possible in a nine-member court. The lines connecting the majorities, akin to diagonals of the circle of dots, are the swing votes. Only one vote changes when two majorities are connected by a line. The line bears the name of the swing vote. The main swing vote is the one departing the most prolific coalition to form the most prolific one connected to that one, which is usually the second most prolific coalition overall (but not in the Powell and Stevens graphs, where that distinction goes to a second conservative coalition). Here the main swing vote is Frankfurter.

Compared to the compositions defined by Powell and later, the proportion of majorities that do not appear on the graph is high for the Vinson composition (as it is for the next composition, defined by Stewart). The swing vote away from the main conservative majority that produces the majority that authors the greatest number of liberal opinions is that of Frankfurter. Despite that Frankfurter is the most active swing vote, the ideological ranking of the justices does not place Frankfurter as the median justice (except for in the last term of the Vinson composition). Rather, from the perspective of ideology the median justice is Reed. According to the ideological ranking, Frankfurter begins Vinson's term as the second most conservative member of the court and swings significantly toward a more liberal rating to switch to the liberal side; he passes from the

11. The graphic of all compositions with popups of the opinions and parenthetical descriptions is at <https://mckinneylaw.iu.edu/instructors/Georgakopoulos/Prof/VisgSCtSwings-PopUp/VisgSCtSwings-CombinedPopupOnly.html> [<https://perma.cc/JT2X-SDX3>]. It is also accessible from nicholasgeorgakopoulos.org, under "Scholarship" and the entry corresponding to this article.

median position during the last term of the Vinson composition. Upon the appointment of Clark and Minton, Frankfurter becomes the seventh most conservative justice, i.e., the third most liberal, after Douglas and Black (albeit with a difference).

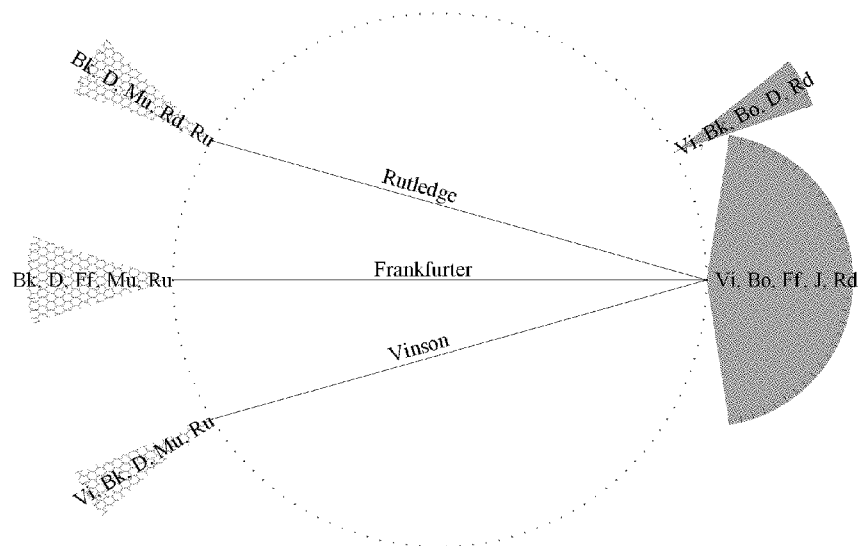


Figure 1. The swing votes of the 5–4 majorities of the Vinson composition of C.J. Vinson (Vi) and Black (Bk), Burton (Bt), Douglas (D), Frankfurter (Ff), Jackson (J), Murphy (Mu), Reed (Rd), and Rutledge (Ru), all Democratic appointees, as they result from fifty-three opinions dating from November 18, 1946, to June 27, 1949, that were issued by majorities issuing more than two opinions and where the most prolific majority authors thirty-three opinions (62 percent of the opinions appearing in the graph).

The second swing vote is that of Rutledge, to a majority that authors five opinions. According to the ideological rankings, Rutledge begins the Vinson composition as the sixth most conservative justice (the fourth most liberal after Black, Murphy, and Douglas) and over its three terms swings to become its most liberal member. The importance of Rutledge’s swing vote given how far the ideological rankings place him from the median is particularly interesting. An analogous phenomenon appears during the Alito and Kagan compositions, where the justice rated as second most conservative (Scalia) and the one rated as the most conservative (Thomas) are, respectively, the second most active swing votes. A single-dimensional approach based on the median voter and the ideological ranking of the justices cannot explain how a justice who is not near the median can have an impactful role as a swing vote.

The main (conservative) coalition also experiences the swing vote of Vinson, to form a majority that authors four opinions. Vinson’s ideological ranking places him near the median. Therefore, the importance of Vinson’s swing vote is not surprising from the perspective of an approach that rests on the median voter.

B. The Stewart Composition (1958–62)

Several judicial departures and appointments separate the Vinson from the Stewart composition, the next composition that issues enough 5–4 opinions for a meaningful graph. The justices in the Vinson composition who left the court prior to Stewart’s appointment are Burton, Jackson, Murphy, Reed, Rutledge, and Vinson. The continuing justices are Black, Douglas, and Frankfurter. The new justices are Brennan, Clark, Harlan, Stewart, Warren, and Whittaker. Clark was appointed by Democratic President Truman. All other new justices are Republican President Eisenhower’s appointees, giving the court a Republican-appointed majority, a feature that remains in all subsequent compositions that we study. The Stewart court, however, is also tightly split by appointment, with just five of its members being Republican appointees. This phenomenon will only reappear during the Kagan composition, the last one we study.

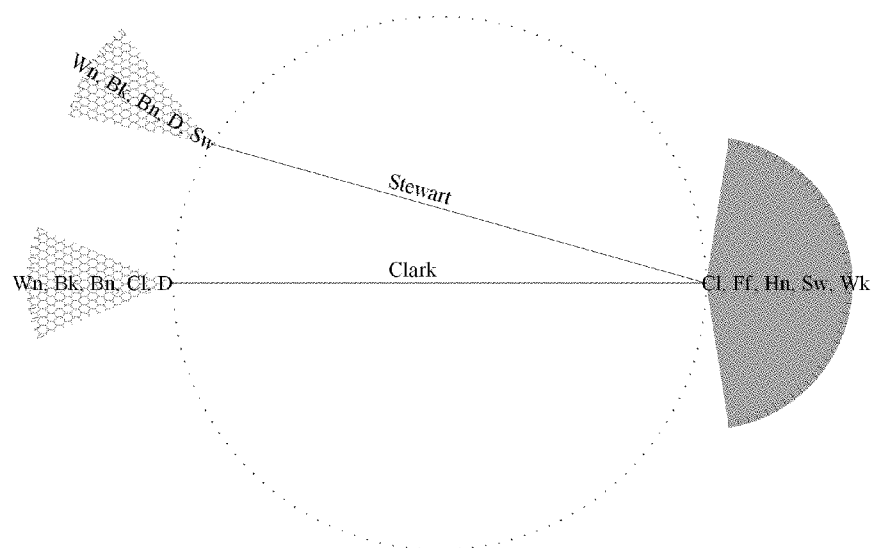


Figure 2. The swing votes of the 5–4 majorities of the Stewart composition of C.J. Warren (Wn) and Black (Bk), Brennan (Bn), Clark (Cl), Douglas (D), Frankfurter (Ff), Harlan (Hn), Stewart (Sw), and Whittaker (Wk)—five Republican appointees, four Democratic—as they result from sixty-one opinions dating from December 8, 1958, to April 19, 1962, that were issued by majorities issuing more than two opinions and where the most prolific majority authors forty opinions (66 percent of the opinions appearing in the graph).

The Stewart composition also presents an interesting and unique problem in the categorization of its fifteen opinions related to “un-American” committee activity.¹² The court splits 5–4 conservative, with Black, Brennan, Douglas, and

12. The Stewart composition issues several opinions related to individuals targeted as communist sympathizers or accused of membership in the Communist Party and who had refused

Warren in the dissent. Of those, only Black and Douglas were Democratic appointees. This tight split, therefore, does not correspond to a difference between appointing parties, with the caveat that Brennan, an appointee of Republican President Eisenhower, was a Democrat. The solitary liberal opinion on this matter reveals Stewart as the swing vote but in a curious manner.¹³

The ideological rankings of justices place Black and Douglas as the by far most liberal members of this court and identify the median justices as Frankfurter, Stewart, and Brennan (as does Bailey) or Clark and Stewart (as do Martin and Quinn). The focus on 5–4 majorities reveals Clark as the most frequent swing vote, closely followed by Stewart, without Frankfurter or Brennan appearing as active swing votes.

The Stewart composition also reveals a polarization that is greater even than the next most intense ones, those of the compositions defined by Alito and Kagan more than forty years later. The figure of the 5–4 majorities and their swing votes has only three majorities, because only three majorities issue more than two opinions. The corresponding figures for the Alito and Kagan compositions have four majorities. All other compositions produce a graph with more majorities—significantly more in the cases of the compositions defined by Stevens, and O’Connor, where the majorities number eleven and twelve,

to cooperate with committees akin to the House Un-American Activities Committee. The targeted individuals objected on various grounds, mostly the right against self-incrimination and the rights of free association. The United States Supreme Court’s 5–4 opinions of this composition never vindicated the corresponding rights despite that the dissenters were quite vocal. However one reacts to this chapter of history and Constitutional interpretation, it presents a categorization problem. Clearly, these opinions should not be categorized separately according to the resulting legal subject matter, so as to scatter them in subject matters such as criminal procedure, administrative law, and professional responsibility. Rather, these opinions belong in a single group. We place these opinions in the broader category of opinions related to social impact. In subsequent compositions of the Court, this category will have opinions about desegregation, abortion, and gay rights. In the earlier composition of Vinson we only place in this category one opinion about conscientious objectors.

13. *See Deutch v. United States*, 367 U.S. 421 (1961). In the *Deutch* opinion, Stewart joins the dissenters to form a majority to reverse an individual’s conviction for refusing to identify other communists on the grounds that the questions were not pertinent to the committee’s charge. The greater ideals of civil rights do not reach the surface. Nor can one argue that the *Deutch* opinion corresponds to a change in Stewart’s position. Although the opinion, appearing in 1961, comes late in this composition, opinions of the opposite slant appear before and after it. Rather than corresponding to a change in the details of the underlying civil rights, the difference appears to stem from the human details of the way this committee conducted its prosecution, such as calling the same witness for the second time, forcing his appearance in the Southern Summer, and interrupting the witness’s vacation. Rather than Stewart taking the position that the committee overreached substantively, it seems more plausible that his swing vote is due to an overreach that may be called procedural. As a result, the swing of Stewart’s vote does not fit in a model of the underlying rights but in a model of the procedures that a governmental entity may use to exercise its advantage.

respectively.

C. The Powell Composition (1972–75)

The composition defined by the unusual appointment on the same day of Rehnquist and Powell (“Powell composition”¹⁴) is also removed from the prior one, of Stewart, by several appointments. The continuing justices are Brennan, Douglas, and Stewart.

In the Powell composition, Burger, Blackmun, and Rehnquist are in all the conservative coalitions. On the other side, Brennan, Douglas, and Marshall are in all the liberal coalitions. The swing vote away from the main conservative majority that produces the majority that author the greatest number of liberal opinions is that of White, an appointee of Democratic President Kennedy. This main liberal coalition, at the nine o’clock position, authors ten opinions. It includes White and Stewart, a Republican appointee. Stewart is also a swing vote, producing the second most productive conservative coalition, at the four o’clock position, which authors sixteen opinions.

14. Again, we name this composition after Powell despite that Rehnquist is considered the junior of the two to avoid confusion from the colloquial use of “Rehnquist court” to refer to the years that the court had Rehnquist as its Chief Justice.

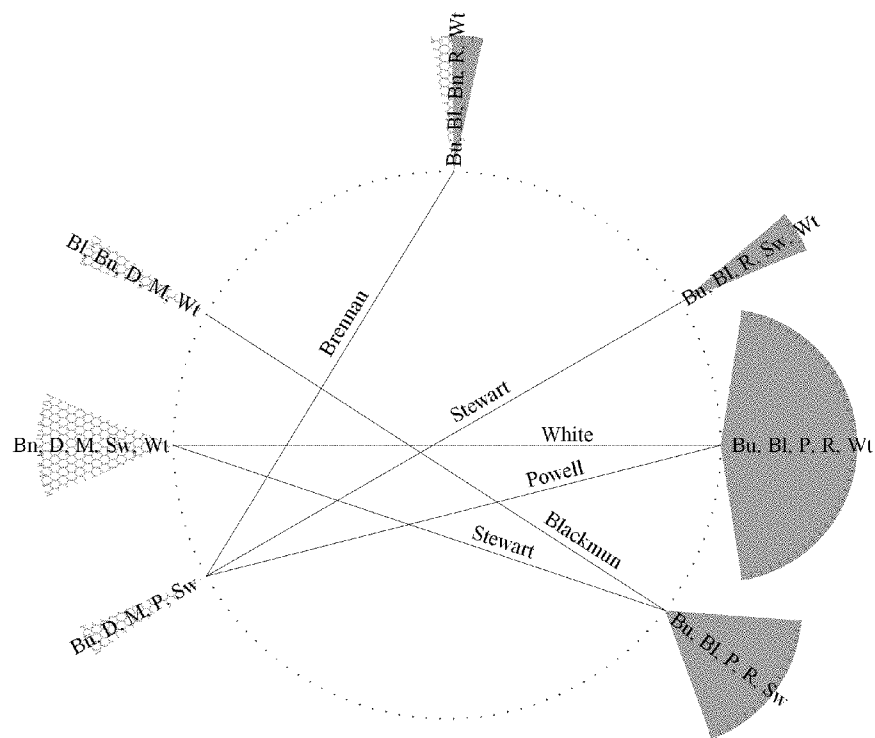


Figure 3. The swing votes of the 5–4 majorities of the Powell composition of C.J. Burger (Bg), and Blackmun (Bl), Brennan (Bn), Douglas (D), Marshall (M), Powell (P), Rehnquist (Rq), Stewart (Sw), and White (Wt)—six Republican appointees and three Democratic—as they result from seventy-seven opinions dating from March 22, 1972, to June 30, 1975, that were issued by majorities issuing more than two opinions and where the most prolific majority authors thirty-seven opinions (48 percent of the opinions appearing in the graph).

Worth noting is that Brennan, despite voting with the liberal block, was appointed by the Republican President Eisenhower. The Democratic appointees are Douglas (of Roosevelt), White (of Kennedy), and Marshall (of Johnson).

The analyses of ideological leaning place White as the median justice and Stewart to his immediate left in this composition.¹⁵ This is a composition where the median justice, according to the ideological rankings, is also the main swing vote; the next most active swing votes, Powell and Stewart, are also near the ideological median, making this a composition that is not far from the expectations of a median voter vision.

15. See *supra* note 3.

D. The Stevens Composition (1975–81)

The Stevens composition is the result of the appointment of Stevens by Republican President Ford to replace Douglas. The majorities are much more fluid, leaving smaller liberal and conservative cores. The conservative core is down to Burger and Rehnquist. The liberal core is down to Brennan and Marshall.

Strikingly, unlike all other compositions of the United States Supreme Court that we study, the Stevens court reveals no dominant conservative or liberal coalitions and, therefore, no dominant swing votes. Powell, who prior to the Stevens composition, was consistently in the conservative coalitions, is now often a swing vote. The likely explanation is that the new composition of the court produces divisions in a more conservative way, so that Powell finds himself more often at the center of the court. The replacement of the very leftmost member of the court, Douglas, by a centrist conservative, Stevens, did not change the median justice, because Stevens was more liberal than the median (and indeed appears in four of the coalitions that issue only liberal opinions but in only one conservative). Therefore, White's loss of the role of the main swing vote refutes the median voter theorem.

Indeed, the ideological scorings of the justices continue to place White as the median justice between Blackmun to his left and Powell to his right, except for the last segment of this composition, when the ideological scorings move White to Powell's right. Whereas White does appear as an active swing vote, his vote does not swing away from the busiest coalition. Powell's is the most active swing vote.

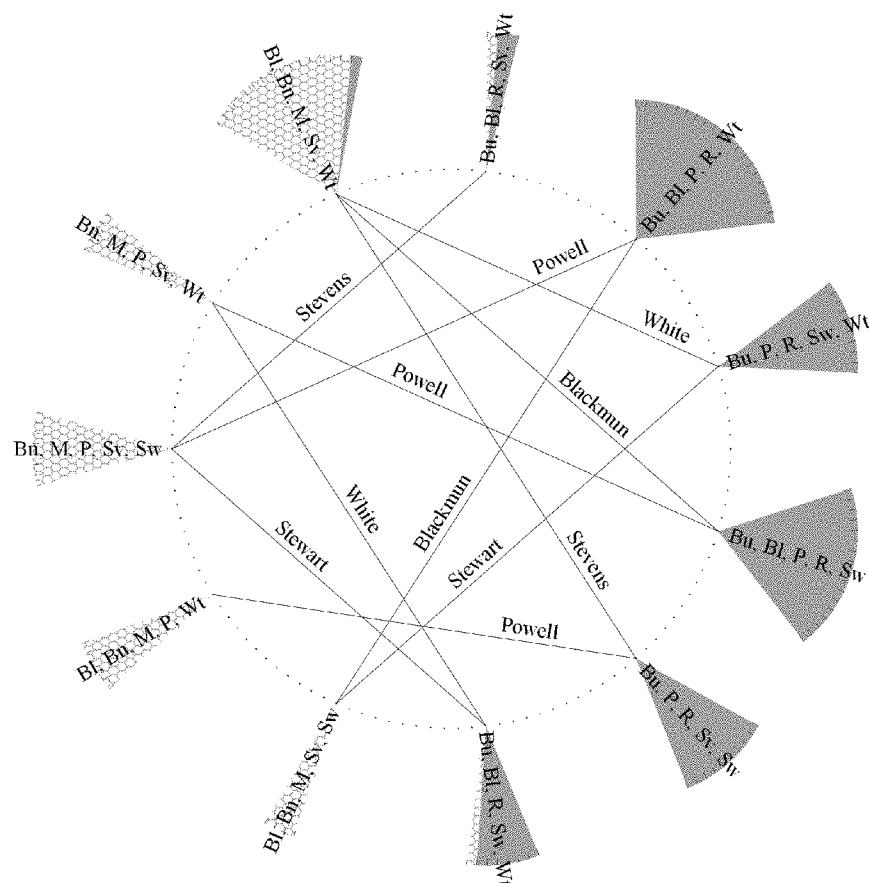


Figure 4. The swing votes of the 5–4 majorities of the Stevens composition of C.J. Burger (Bg) and Blackmun (Bl), Brennan (Bn), Marshall (M), Powell (P), Rehnquist (Rq), Stevens (Sv), Stewart (Stewart), and White (Wt)—seven Republican appointees and two Democratic—as they result from ninety-eight opinions dating from April 26, 1976, to June 26, 1981, that were issued by majorities issuing more than two opinions and where the most prolific majority authors nineteen opinions (19 percent of the opinions appearing in the graph).

The Stevens composition, therefore, is in tension with the median voter theorem in two ways: in the change of its swing vote from the prior composition despite the lack of change of the median justice, and in the fact that its median justice, White, is not the busiest swing vote.

E. The O'Connor Composition (1981–86)

The O'Connor composition is the result of the appointment of O'Connor by Republican President Reagan to replace Stewart. The conservative core remains Burger and Rehnquist. The liberal core remains Brennan and Marshall.

The most prolific coalition is the conservative one at three o'clock, which issues forty-six opinions. The main swing vote of White produces the most productive liberal coalition, at the nine o'clock position, which authors twenty opinions. The second swing vote, that of Powell, produces the liberal majority coalition at the ten o'clock position, which authors sixteen opinions. One more notable swing vote is that of Stevens from the main liberal coalition to form the second most active conservative coalition at the four o'clock position, which authors ten opinions.

The ideological ranking of the justices places White and then Powell as the median justices of the O'Connor composition. That they are also its main swing votes agrees with the expectations of the median voter theorem.

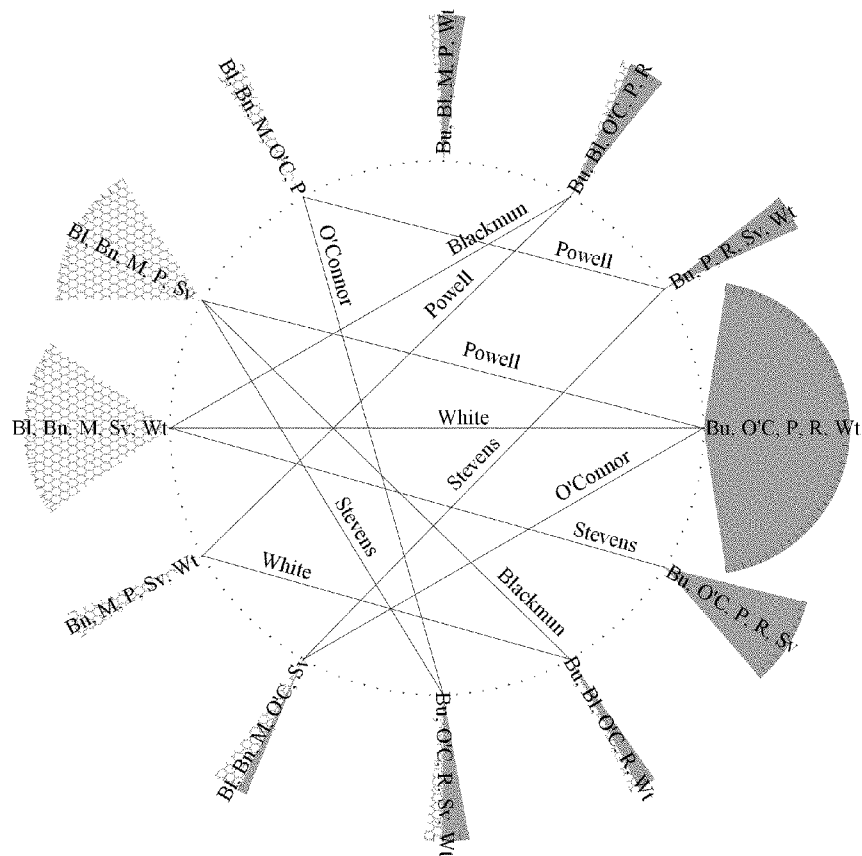


Figure 5. The swing votes of the 5-4 majorities of the O'Connor composition of C.J. Burger (Bg), and Blackmun (Bl), Brennan (Bn), Marshall (M), O'Connor (O'C), Powell (P), Rehnquist (Rq), Stevens (Sv), and White (Wt)—seven Republican appointees and two Democratic—as they result from 123 opinions dating from December 2, 1981, to July 7, 1986, that were issued by majorities issuing more than two opinions and where the most prolific majority authors forty-six opinions (37 percent of the opinions appearing in the graph).

F. The Kennedy Composition (1988–1990)

The Kennedy composition is separated by one appointment from the O'Connor composition. The Chief Justice is now Rehnquist. Justice Scalia was nominated by Republican President Reagan and appointed on September 26, 1986. The departed justice was Chief Justice Burger. The Scalia composition, however, produces fewer than forty-five tightly split opinions, too few for a meaningful graphic. Justice Kennedy was also nominated by President Reagan and appointed on February 18, 1988, replacing Powell. The court produces eighty-nine tightly split opinions with this composition. The conservative core of the court is Rehnquist and Scalia. The liberal core is Blackmun, Brennan, and Marshall. White is the primary swing vote away from the main conservative coalition. Kennedy and O'Connor tie as its secondary swing votes. From the main liberal coalition, after White, the only swing vote is Stevens. A majority that issues a few liberal opinions (Blackmun, Brennan, Kennedy, Marshall, and Scalia) is not connected with a swing vote to any of the majorities that appear on the graph, a phenomenon that also arises in the Breyer and Alito compositions.

The conservative core joined by Kennedy and O'Connor constitutes the most productive coalition, the conservative coalition at the three o'clock position that authors forty-seven opinions. The dominant swing vote is White, producing the liberal majority at nine o'clock that authors twelve opinions, followed by a tie between Kennedy and O'Connor, whose swing votes produce the liberal majorities at the ten o'clock position and the eight o'clock position that author four opinions each. Stevens, the secondary swing from the main liberal coalition, produces the second conservative coalition authoring three opinions and consisting of Rehnquist, Kennedy, O'Connor, Scalia, and Stevens.

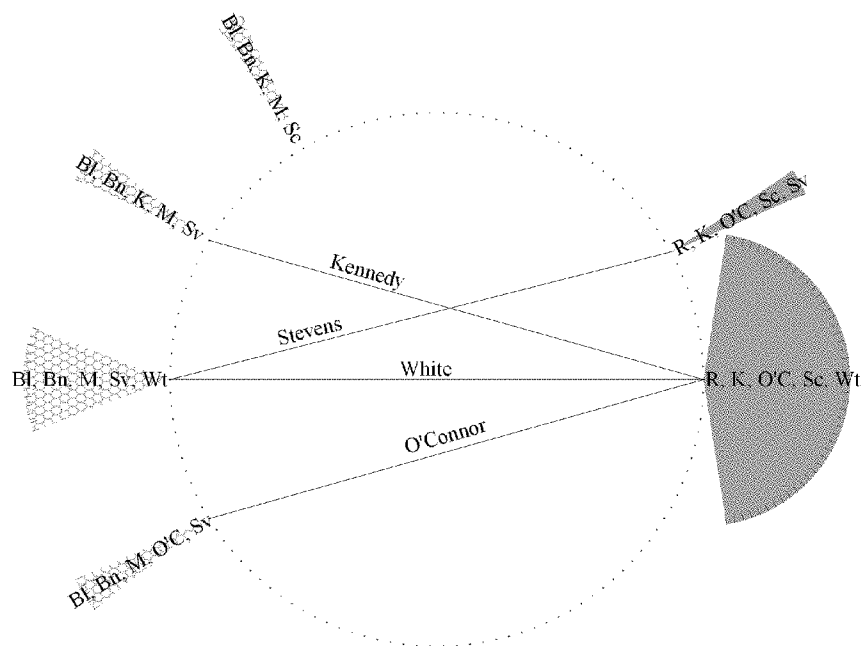


Figure 6. The swing votes of the 5–4 majorities of the Kennedy composition consisting of C.J. Rehnquist (Rq) and Justices Blackmun (Bl), Brennan (Bn), Kennedy (Ke), Marshall (M), O’Connor (O’C), Scalia (Sc), Stevens (Sv), and White (Wt)—seven Republican appointees and two Democratic—as they result from seventy-three opinions dating from April 25, 1988, to June 27, 1990, that were issued by majorities issuing more than two opinions and where the most prolific majority authors forty-seven opinions (64 percent of the opinions appearing in the graph).

The Kennedy composition, in having seven appointees of Republican presidents, shares that characteristic with the preceding compositions of Stevens and O’Connor. Nevertheless, the resulting graphic is quite different. Whereas in the prior two compositions that had seven Republican appointees, the court split to produce many different 5–4 coalitions, that is no longer the case. The Kennedy graph displays only six coalitions, whereas the graphs for Stevens and O’Connor displayed eleven and twelve coalitions. Moreover, only two of the Kennedy graph’s coalitions predominate, whereas in the Stevens and the O’Connor graphs several of the coalitions issued similar and significant numbers of opinions.

G. The Breyer Composition (1994–2005)

The Breyer composition is separated from Kennedy’s by several appointments. Souter and Thomas, appointed by Republican President G.H.W. Bush, replace Brennan and Marshall, respectively. Ginsburg and Breyer, appointed by Democratic President Clinton, replace White and Blackmun, respectively, and are the court’s only Democratic appointees. The liberal core is Ginsburg, Souter, and Stevens. The conservative core is Rehnquist, Scalia, and Thomas.

The conservative core joined by Kennedy and O'Connor constitutes the most productive coalition, the conservative coalition at the three o'clock position that authors eighty-six opinions. The dominant swing vote is O'Connor, producing the liberal majority at nine o'clock that authors thirty-one opinions, followed by Kennedy, whose swing vote produces the liberal majority at the ten o'clock position that authors eighteen opinions. Ginsburg, Stevens, and Souter are rare swing votes away from the liberal coalition.

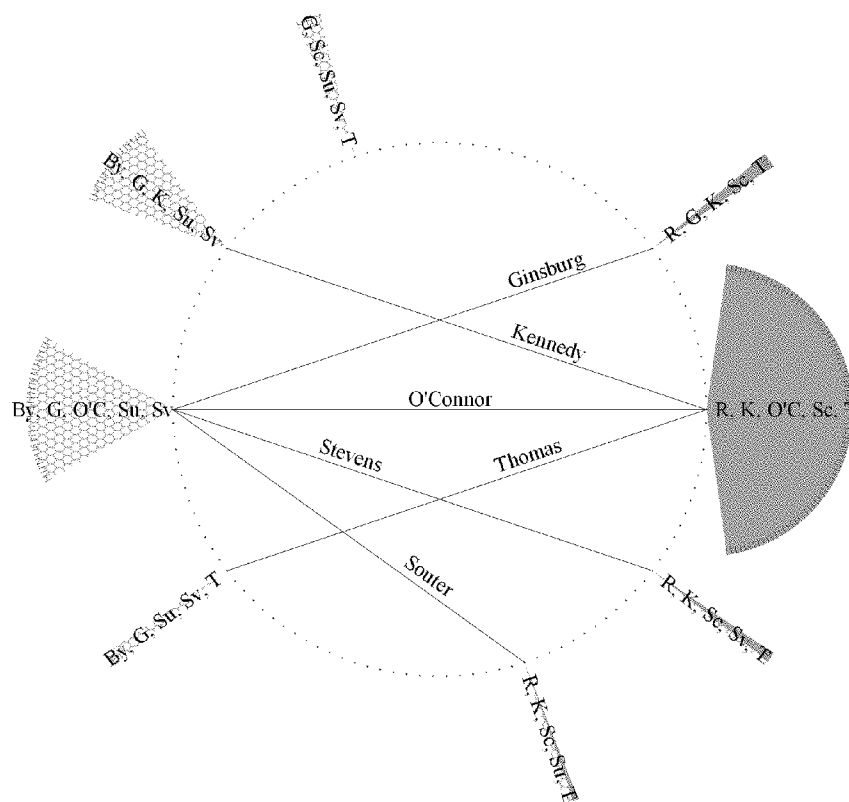


Figure 7. The swing votes of the 5–4 majorities of the Breyer composition of C.J. Rehnquist (Rq), Breyer (By), Ginsburg (G), Kennedy (Ke), O'Connor (O'C), Scalia (Sc), Souter (Su), Stevens (Sv), and Thomas (T)—seven Republican appointees and two Democratic—as they result from 152 opinions dating from November 14, 1994, to June 27, 2005, that were issued by majorities issuing more than two opinions and where the most prolific majority authors eighty-six opinions (57 percent of the opinions appearing in the graph).

H. The Alito Composition (2006–09)

The composition defined by Alito results from the departure of O'Connor and Rehnquist and their replacement by Alito and Roberts, appointed by Republican President G.W. Bush.

The Alito court—similarly to the next composition that we study, the Kagan

court—presents strikingly few, only four, coalitions that form to produce three or more opinions.¹⁶

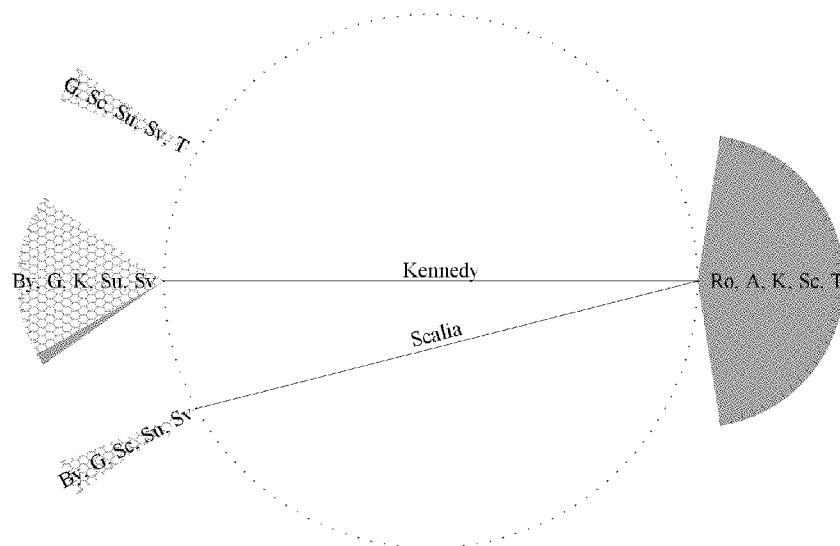


Figure 8. The swing votes of the 5–4 majorities of the Alito composition of C.J. Roberts (Ro) and Alito (A), Breyer (By), Ginsburg (G), Kennedy (Ke), Scalia (Sc), Souter (Su), Stevens (Sv), and Thomas (T)—seven Republican appointees and two Democratic—as they result from fifty-six opinions dating from May 30, 2006, to June 29, 2009, that were issued by majorities issuing more than two opinions and where the most prolific majority authors thirty-five opinions (63 percent of the opinions appearing in the graph).

The dominant conservative majority, at the three o'clock position, produces thirty-five opinions and consists of Roberts, Alito, Kennedy, Scalia, and Thomas. The swing vote of Kennedy produces the dominant liberal majority, at the nine o'clock position, which authors fifteen opinions and consists of Breyer, Ginsburg, Kennedy, Souter, and Stevens. The other swing vote from the dominant conservative majority, the swing of Scalia, produces a majority that authors only three opinions, all liberal, and consists of Breyer, Ginsburg, Scalia, Souter, and Stevens. This appears at the eight o'clock position. One more liberal majority appears, formed by pulling both Scalia and Thomas from the conservative block, while the liberal majority loses Breyer to the conservative side. No single swing vote connects it with any of the prior majorities. It appears at the ten o'clock position and issues three liberal opinions.

Notice also that despite the apparent lack of fluidity of the Alito composition, the illustration still shows a contraslated opinion: a barely conservative opinion

16. We drop one 5–4 opinion as not being a truly tightly split opinion; a merely apparent 5–4 split appears in *Clark v. Arizona*, 548 U.S. 735 (2006). One of the dissents, that of Breyer, actually agrees with the majority's interpretation but dissents for a remand instead of a reversal. *Id.* at 780.

from the main liberal majority.¹⁷ The next and last composition of the Supreme Court that we study, the one defined by Kagan as the junior justice, has no contraslated opinions.¹⁸

I. The Kagan Composition (2010–16)

The composition defined by Kagan results from the departure of Stevens and Souter and their replacement by Kagan and Sotomayor by Democratic President Barack Obama. The Kagan composition, with four Democratic appointees, has the greatest number of Democratic appointees of any of the courts we study after the appointment of Stewart in 1958 tipped the court to majority Republican. The Democratic appointees are Breyer, Ginsburg, Kagan, and Sotomayor.

The Kagan composition has few tight majorities issuing more than two opinions. As in the case of the Alito composition, only four majorities produce more than two opinions and appear on the graph.

The dominant conservative majority, at the three o'clock position, produces thirty-three opinions and consists of Roberts, Alito, Kennedy, Scalia, and Thomas. The swing vote of Kennedy produces the dominant liberal majority, at the nine o'clock position, which authors twenty-three opinions and consists of Breyer, Ginsburg, Kagan, Kennedy, and Sotomayor. The other swing vote from the dominant conservative majority, that of Thomas, produces a liberal majority that authors only three opinions and consists of Breyer, Ginsburg, Kagan, Sotomayor, and Thomas. A conservative majority of a quite different composition, so that no single swing vote connects it with any of the prior majorities, appears at the four o'clock position and issues five opinions. This

17. *Marrama v. Citizens Bank of Mass.*, 549 U.S. 365 (2007) (holding that bankruptcy courts have the authority to block abusive attempts to convert a chapter 7 filing into a chapter 13 proceeding; the dissent would allow no such discretion).

Outside of the majorities illustrated in the graphic, a single majority issues opinions with both conservative and liberal slants. The majority of Alito, Breyer, Ginsburg, Kennedy, and Stevens issues one liberal opinion and one conservative one.

The liberal opinion lets states deviate from the letter of the statute and ignore small school districts when following the statutory algorithm for equalizing per-pupil expenditures. *Zuni Pub. Sch. Distr. No. 89 v. Dep't of Educ.*, 550 U.S. 81 (2007).

The conservative opinion allows states to assign to judges rather than juries the determination of the facts that trigger consecutive rather than concurrent running of sentences, an exception to *Apprendi v. New Jersey*, 530 U.S. 466 (2000). *Oregon v. Ice*, 555 U.S. 160, 172 (2009).

18. The Kagan composition, like the Alito one, has a single majority that issues one opinion of each slant. The majority that issues one opinion of each slant on the Alito composition is Alito, Breyer, Ginsburg, Kennedy, and Stevens. On the Kagan composition it is Roberts, Alito, Breyer, Scalia, and Thomas. That coalition could have arisen in the Alito composition. Yet, it did not. If it arose in the Alito composition, the dissenters would have been Ginsburg, Kennedy, Souter, and Stevens. The actual dissenters on the Kagan composition were Ginsburg, Kagan, Kennedy, and Sotomayor.

majority takes the vote of Breyer from the liberal group but loses the vote of Scalia from the conservative group. It consists of Roberts, Alito, Breyer, Kennedy, and Thomas.

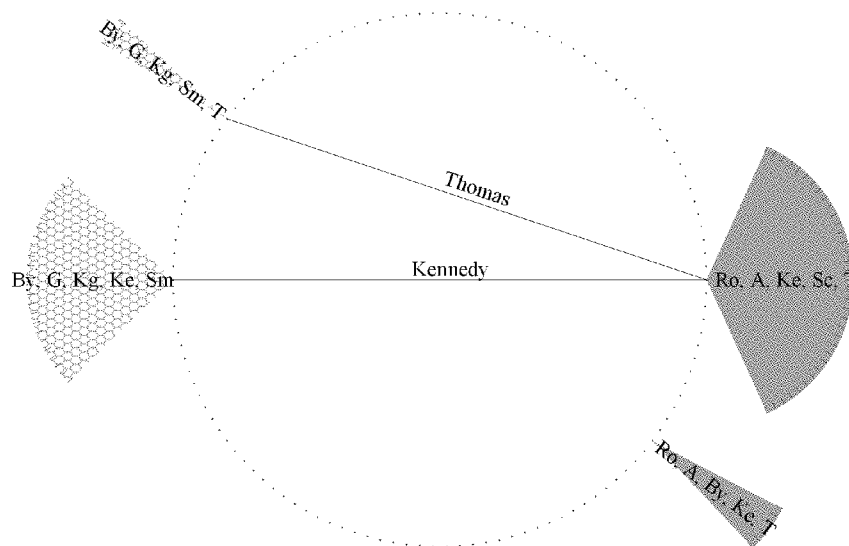


Figure 9. The swing votes of the 5–4 majorities of the Kagan composition of C.J. Roberts (Ro) and Alito (A), Breyer (By), Ginsburg (G), Kagan (Kg), Kennedy (Ke), Scalia (Sc), Sotomayor (Sm), and Thomas (T)—five Republican appointees and four Democratic—as they result from sixty-four opinions dating from March 29, 2011, to June 29, 2015, that were issued by majorities issuing more than two opinions and where the most prolific majority authors thirty-three opinions (52 percent of the opinions appearing in the graph).

IV. THE EBB AND FLOW OF FLUIDITY

The primary phenomenon that this 1946–2016 graphical sojourn across 5–4 coalitions, their opinions, and the swing votes connecting them, reveals is first an increase and then a decrease of what we call fluidity. High fluidity corresponds to a court where justices coalesce in different ways to form many 5–4 coalitions, where each coalition issues a number of opinions similar to that of the other coalitions and many swing votes connect those coalitions. Low fluidity corresponds to a court that forms few coalitions, where even fewer coalitions dominate the issuance of opinions and few swing votes exist. Whereas making a consequentialist argument in favor of high or low fluidity must remain a future project, high fluidity corresponds to a truer collective nature of making decisions, as opposed to a court with a single swing vote, where some decisions effectively depend on a single vote.

The graphs reveal that in the 1946 to 2016 period that we study, fluidity tended to gradually increase, reached its maximum during the Stevens composition (1975–81), and then tended to gradually decrease. This phenomenon is in part visible in the graphs. The graphs corresponding to high fluidity—the compositions defined by Powell ('72–75), Stevens ('75–81), and O'Connor

('81–86)—show that several coalitions issue opinions (seven to twelve), that the number of opinions each coalition issues is closer to proportional, while also having a multitude of swing votes (six to twelve, justices can appear more than once as swing votes between different coalitions). The graphs illustrating the opposite extreme of low fluidity are those of the compositions defined by Stewart ('58–62), Alito ('06–09), and Kagan ('10–16). They have few coalitions (three or four) with one or two coalitions dominating the issuance of opinions. They also have few swing votes (two or three). Moreover in the case of the Alito and Kagan compositions, a single swing vote dominates, that of Kennedy.

Table 2 collects metrics related to fluidity for the compositions illustrated by graphs above. The first three rows have the junior justice who defines the composition of the court, the calendar years of that composition, and the political composition of the court by appointing party, i.e., the number of justices appointed by presidents of each party. The Vinson composition is entirely nominated by Democratic presidents and the only one with a majority of Democratic appointees. Next, Stewart's composition is tightly split by party, which only arises again at the last composition we study, Kagan's.

The next two rows have, in row 4, the number of 5–4 coalitions that form in total and, in row 5, the number of 5–4 coalitions that appear on the graph (by issuing more than two opinions). Row 6 has the percentage that the coalitions that appear on the graph are as a fraction of the total number of coalitions formed.

Row 7 has the number of opinions issued by the most prolific coalition and row 8 that number as a fraction of the total number of opinions that appear on the graph, an imprecise metric but one that is high when fluidity is low because the busiest coalition issues many opinions, and which is low when fluidity is high, reflecting the fact that each coalition issues close to a proportional number of opinions. This follows the expected pattern. It is lowest during the Stevens composition and high during the compositions that have low fluidity, taking its highest value during the Stewart composition.

Row 9 has the number of swing votes that appear on the graph, again following the pattern by being high during the Powell, Stewart, and O'Connor compositions and low during the Vinson, Stewart, Alito, and Kagan ones.

In row 10 appears the index of fluidity, which we developed previously.¹⁹ Whereas it has the small fluctuations that a precise metric would tend to produce, we see a clear break between higher values (.43 and above) for the Vinson, Powell, Stevens, and O'Connor compositions and lower values (below .35) for the compositions of, Stewart, Kennedy, Breyer, Alito, and Kagan.

19. See Sullivan et al., *supra* note 2.

1.	Composition/ Jr. Justice	Vinson	Stewart	Powell	Stevens	O'Connor	Kennedy	Breyer	Alito	Kagan
2.	Years	'46-49	'58-62	'72-75	'75-81	'81-86	'88-90	'94-05	'06-09	'10-16
3.	Appointing party, R-D	0-9	5-4	6-3	7-2	7-2	7-2	7-2	7-2	5-4
4.	Total coalitions	28	19	23	33	33	19	35	14	13
5.	Coalitions on graph	5	3	7	11	12	6	8	4	4
6.	Coal'n % on graph	18%	16%	30%	33%	36%	32%	23%	29%	31%
7.	Most opin's by coalition	33	40	37	19	46	47	86	35	33
8.	Most as % of graph	62%	66%	48%	19%	37%	64%	57%	63%	52%
9.	Swing on graph	3	2	6	11	12	4	6	2	2
10.	Fluidity index	.47	.31	.43	.57	.45	.31	.34	.29	.32
11.	Contraslanted	0	0	2	3	6	0	2	1	0
12.	Contrasl'd % of gr.	0%	0%	2.6%	3.1%	4.9%	0%	1.3%	1.8%	0%

Table 2. Metrics Related to Fluidity.

A phenomenon that is not immediately related to the above understanding of fluidity is in harmony with the same pattern. We have mentioned that most coalitions only issue opinions of one political slant, either only conservative or only liberal opinions, and *contraslanted* are those opinions that have a political slant opposite to that of the majority of opinions of the coalition that issues them. The number of *contraslanted* opinions, in row 11, is very low, not allowing confident conclusions. Nevertheless, their percentage, in row 12, follows the pattern. The percentage of *contraslanted* opinions is higher during the courts with great fluidity, ranging from 2.6 percent to 4.9 percent. It is at its lowest during the compositions with low fluidity, being zero in three compositions (Vinson's, Stewart's, and Kagan's) and 1.8 percent during Alito's. Dearth of *contraslanted* opinions should appear during environments of more intense differences between members of the court. Abundance of *contraslanted* opinions, by contrast, should appear when the members of the court have less concern about the political aspects of adjudication. A composition with high fluidity should also be less politically polarized. Therefore, it should also be more likely to issue *contraslanted* opinions.

We return to the potential relevance of the political composition of the court by appointing party for fluidity. One can easily formulate a theory that a court dominated by a single party, i.e., that has a supermajority of justices (six or more in the case of a nine-member court) appointed by presidents of the same party, will tend to produce more fluidity. A court that is tightly split by its appointing party should be less fluid because, given that there will always be some quantity of issues on which the political parties are split, those issues will split the court 5-4; the appointees of one party in agreement with each other and in disagreement with the appointees of the other party, resulting in predictable and fixed coalitions. By contrast, if a supermajority (six or more) appointees are from the same party, what splits the court 5-4 will not be issues that split the parties; those issues will be decided by a supermajority vote. Rather, when such a court

splits 5–4, those divisions will be less predictable and more varied. That would produce a more fluid court, a court that splits 5–4 in many ways, as opposed to the court that is tightly split by appointing party.

Appealing as this hypothesis may be, it has some but limited purchase in the data. Granted, the four most fluid courts that we see are all dominated by one party. The compositions defined by Vinson (dominated by Democratic appointees) and by Powell, Stevens, and O’Connor (dominated by Republican appointees) conform to the hypothesis.²⁰ Moreover, as the hypothesis predicts, two of the least fluid courts are tightly split by appointing party. These are the compositions defined by Stewart and Kagan.

However, the Kennedy, Breyer, and Alito compositions contradict the hypothesis that dominance by one party produces fluidity, as do the Vinson composition’s attributes other than its index. The Kennedy, Breyer, and Alito compositions had only two Democratic appointees (as did the Stevens and O’Connor compositions). Nevertheless, Kennedy’s composition departed from the fluidity displayed by the preceding compositions of Stevens and O’Connor and this has continued with the Breyer, Alito, and Kagan compositions. Additional concerns, either at appointing time or during the tenure of the justices, may influence the court’s fluidity in ways that the division by appointing party is too facile to capture. Perhaps, some of the appointees of Presidents Reagan and G.H.W. Bush, O’Connor, Scalia, Kennedy, Souter, and Thomas, may have been unlike the prior Republican appointees in ways that initiated a reduction of fluidity despite the appearance of continuity in the appointing party. We leave such speculation to others.

In sum, our primary contribution is that we observe an ebb and flow of fluidity. The phenomenon is supported by numerous additional metrics and, in turn, supports our index of fluidity by being consistent with it. However, these changes of fluidity are not amenable to simple analysis. Rather, we would like to flag fluidity as an important attribute of supreme courts that needs better understanding and is amply worthy of further analysis.

V. LIMITATIONS OF LOCATIONAL MODELS

The graphical and geometric nature of the graphs naturally lends itself to a comparison with locational models of adjudication. We find major discrepancies with the simpler median voter theorem but also with multidimensional models.

The median voter theorem takes a one-dimensional view of voting, from the political right to the political left. It posits that in an environment dominated by two parties, the party that obtains the vote of the median voter wins the elections. Effectively, voters are aligned in that one dimension. The central voter, the

20. A complication about the Vinson composition is that its high fluidity index is driven by having many coalitions which only produce one or two opinions and, therefore, do not appear on the graph. Otherwise, it exhibits all the phenomena of low fluidity: few visible coalitions, few swing votes, and no contraslated opinions.

median, breaks any tie, and the party that obtains that vote gets the majority.²¹

Simplistic as this model may be, applying it to adjudication is straightforward. One would arrange the justices on a single dimension, from right to left. The model suggests that the median justice's vote would resolve close cases, i.e., the 5–4 cases that we study here. Indeed, political scientists armed with big data computational methods have produced right-to-left ideological scorings of justices.²²

If the ideological positions of each judge were precise and expressed with exactitude, then the median voter theorem would become a deterministic model that is utterly inconsistent with the data. Only two coalitions would exist in every composition of the court and the median justice would be the only swing vote. Giving the median voter theorem some additional complexity, the vote on each case would take additional uncertainty, effectively adding some randomness to each vote, perhaps corresponding to each judge's perception of each case being different, colored by various circumstances. This would allow judges to appear to have swapped positions, if, for example, a more liberal judge perceives a dispute as deserving a less liberal outcome while the next less liberal judge perceives it as deserving a more liberal one. In that version of the model, the outcomes would depend on the size of the variation that the added randomness would allow. If little variation existed, the model might lead to merely the occasional other swing vote, besides the true median. If a lot of variation were added, the model could produce many different coalitions and swing votes. The latter outcome seems unrealistic and the data does not conform to the notion of many random coalitions. The former would imply that the occasional second swing vote would be adjacent to the median. However, occasionally the second swing votes we see are far from the median, as was the case with Scalia and Thomas in recent compositions, and Rutledge during the composition defined by Vinson. Therefore, the data are incompatible with the simple locational model of the median voter theorem, either in a version of accurate locations or one with added randomness.

Table 3 collects information comparing the ideological ranking of justices and the swing votes of each composition. Row 2 has the median justice according to the two leading ideological rankings of the justices (but only the first one, by Martin and Quinn, reaches Vinson's composition). Row 3 has the actual main swing vote, i.e., the vote that connects the busiest coalition to the next one linked by a swing vote. Whereas the main swing vote is included as one of the median voters in 13 of the potential 17 comparisons, true absolute agreement exists for only four of the nine compositions we study. In other words, the two ideological rankings and the main swing vote are only identified correctly and exclusively in four compositions: Powell's, Kennedy's, Alito's, and Kagan's. In all other compositions, the ideological rankings disagree or identify several different

21. The median voter theorem tracks its ancestry to Harold Hotelling, *Stability in Competition*, 39 *ECON. J.* 41–57 (1929).

22. See Martin & Quinn, *supra* note 3; Bailey, *supra* note 3. See also *Ideological Leanings*, *supra* note 3.

median voters over the composition's duration. To the extent that the second ideological ranking purports to be an improvement, it identifies correctly only O'Connor as the median for Breyer's composition but performs more poorly than the original ranking in Stewart's composition, where only the original ranking included the actual main swing vote, Clark, as a median justice. Both ideological rankings fail in the Stevens composition, where the main swing vote is Powell, whom neither study includes as a median justice despite producing alternating median justices.

Row 4 has the number of opinions issued by the coalition to which the main swing vote goes—usually the second most active coalition. Those are the majorities that this swing vote creates when it swings away from the busiest coalition. Row 5 expresses this number as a percentage of the opinions that appear on the graph. Row 6 expresses this number as a percentage of the number of opinions issued by the most active coalition. When a single swing vote dominates, as does Kennedy's during the compositions defined by Alito and Kagan, those percentages are elevated.

Row 7 has the secondary swing vote, i.e., the one connecting the busiest coalition to the second most prolific linked coalition. Row 8 has the ideological ranking of that justice by the two rankings. In three compositions, Vinson's, Alito's, and Kagan's, the secondary swing vote has an ideological ranking far from the median. Rutledge is ranked as the most liberal member of the Vinson composition. Thomas is ranked at the conservative extreme of the Kagan composition. Scalia is ranked as the second most conservative member of the Alito composition. The tie of Kennedy and O'Connor as secondary swing votes during the Kennedy composition complicates their ranking, but O'Connor also appears as the second most conservative justice for a period of that composition but only according to the second ideological ranking, Bailey's. Whereas the median voter theorem, even with added randomness, would argue that the secondary swing vote should be adjacent to the median, that repeatedly fails to occur. Not rarely, the Supreme Court has had its secondary swing vote be far from the median.

1.	Composition/Jr. Justice	Vinson	Stewart	Powell	Stevens	O'Connor	Kennedy	Breyer	Alito	Kagan
2.	Median per M&Q/B	Reed Frankf. Burton	Clark Stewart/ Frankf. Stewart Brennan	White	White Stewart Blackm./ White Stewart	White Powell	White	Kennedy, O'Connor/ O'Connor	Kennedy	Kennedy
3.	Main swing vote	Frankf.	Clark	White	Powell	White	White	O'Connor	Kennedy	Kennedy
4.	Swing to opinions	7	11	10	7	20	12	31	15	23
5.	Main sw as % of graph	13%	18%	10%	7%	16%	16%	20%	27%	36%
6.	As % of most active	21%	28%	27%	37%	43%	26%	36%	43%	70%
7.	Secondary swing vote	Rutledge	Stewart	Powell	Blackm.	Powell	K, O'C	Kennedy	Scalia	Thomas
8.	Rank per M&Q/B	7-9	4/3-5	4	3/3,4,6	4-5/3-5	3,4/2,3,4	5,4/4	2/3	1
9.	Swing to opinions	4	10	3	3	16	4	18	3	3
10.	Sec'ry sw as % of main	57%	90%	30%	43%	80%	33%	58%	20%	13%

Table 3. Ideological Ranking and Swing Votes.

A related discrepancy with the median voter theorem comes from comparing the Powell composition to that of Stevens. The membership of the court changed by a single member, by the replacement of Douglas by Stevens. Douglas was by far the most liberal member of the court. Admittedly, Stevens, despite being the nominee of Republican President Ford, was not very conservative. (Stevens appears on the liberal side of that court of seven Republican appointees.) For evaluating the median voter theorem, the point is that the replacement of far-left Douglas with the moderate Stevens did not change the median justice. In a direct contradiction of the median voter theorem, when Stevens replaces Douglas, the main swing vote changes from White to Powell.

Granted, the one-dimensional nature of the median voter theorem is simplistic, making its rejection by the data unremarkable. However, this data reveals a phenomenon that shows that even locational models with many dimensions cannot be durable. Despite that an ideal model with many dimensions could capture nuance, it could still not account for the creation of new dimensions. Adjudication by supreme courts, however, often creates new dimensions, adding new tests or elements for a legal conclusion, or removing them by overruling such precedent. An illustration of a creation of a new test, i.e., a new dimension from the perspective of locational modelling, in criminal procedure arises in the *Apprendi* line of cases in this data.

Apprendi is about criminal procedure, interpreting due process and the right to a jury trial in the context of sentencing enhancements.²³ Sentencing enhancements increase criminal penalties in specific circumstances. In the example of *Apprendi*'s facts, the penalty increased due to racial animus in the commission of the crime. The *Apprendi* line of opinions holds that facts which increase the maximum sentence must be found by the jury beyond a reasonable doubt. Thus, even if a fact is not an element of the crime, if this fact triggers an increase of the maximum penalty, then *Apprendi* requires it to be treated the same way that elements of the crime are. In a trial, the jury must establish this fact beyond reasonable doubt. The majority that produced *Apprendi* appears at the 11 o'clock position of the Breyer graph and has the additional feature that this majority only formed to issue the *Apprendi* line of opinions and one unrelated opinion on tort liability.²⁴ Moreover, this majority has no swing votes linking it with the others of the graph. It draws two votes from the conservative side of the court, Scalia and Thomas. Also, it fails to draw Breyer's vote from the liberal side of the court.

Suppose that a locational model of criminal procedure had been created before the first of the *Apprendi* opinions were issued, i.e., before *Jones*. This model completely described criminal procedure and each justice's attitudes about every aspect of it. The model would be a perfect description of criminal procedure and would perfectly predict every vote of every justice on every criminal procedure issue. Despite its completeness, however, this model of criminal procedure would use inferences from prior precedent to answer the

23. *Apprendi v. New Jersey*, 530 U.S. 466 (2000).

24. See *infra* Appendix A, text accompanying notes 23–27.

question whether penalty enhancements should be found by juries beyond reasonable doubt—to wit, not the *Apprendi* holding. Moreover, the justices' other positions on criminal procedure did not foretell their position on this issue, because this was a unique coalition. In other words, this complete model of criminal procedure would be rendered obsolete by the *Apprendi* line of cases because they created a new dimension in criminal procedure. The fact that this new dimension involved a coalition that had not formed for any other issue of criminal procedure underscores its novelty and that it could not have been predicted by the previously correct model.²⁵

VI. CONCLUSION

Fluidity is an important attribute of adjudication by supreme courts. Our graphical presentation of the coalitions, the swing votes, and the opinions of supreme court compositions allowed not only a quantitative approach to fluidity but also a visual one. We hope this opens avenues for further research.

We submit that this analysis refutes the possibility of having locational models of either the level of generality of the median voter theorem or of the level of complete specificity that would account for every interpretation. The median voter theorem fails because (a) the most active swing vote is often not the median by ideology justice; (b) the second most active swing vote is often far from the ideological median; and (c) the pattern of coalitions does not conform to the predictions of the median voter theorem, which would call for two dominant coalitions plus additional coalitions due to noise. A locational model of complete specificity is refuted by the creation of new and unexpected coalitions (and dimensions), as exemplified by the *Apprendi* coalition.

This analysis also has relevance about the efficiency of the common law and plaintiffs' victory rate, inviting further research in those directions. The argument about the efficiency of the common law rests on the notion that ineffective interpretations would attract litigation, which would lead to their alteration. Support for this hypothesis may stem from the persistence of the litigation about Un-American Activities Committees that appears in the Stewart composition. To the extent those results were not in harmony with straightforward understandings of the First Amendment, their repeated litigation despite repeated 5–4 losses supports the premise that some outcome (arguably inefficient) will attract litigation. The persistence of the litigation without a change of outcome during that composition does not support the conclusion that the repeated litigation will change the law. However, the predominance of criminal procedure in all compositions may serve as a counterexample. In the Vinson composition, we see the Court stating that the Constitution must not be interpreted so as to dictate to

25. In Appendix A we pursue the information contained in the swing votes connecting the *Apprendi* coalition to the coalitions issuing one or two opinions and which, therefore, do not appear on the graph. Only one helps explain a likely change in Justice Thomas, again underlining the novelty and unpredictability of the *Apprendi* line of cases.

the states their criminal procedure.²⁶ By today's standards, that is a quaint anachronism. Federal criminal procedure dominates that of the states, despite herculean efforts by the legislature to limit the involvement of the federal judiciary, for example by limiting *habeas corpus* jurisdiction.²⁷ The argument that this outcome—the subsuming of state criminal procedure by federal Constitutional interpretation—is efficient, seems quite difficult to make. More likely, this is an expression of a different premise, that what attracts litigation is not inefficient interpretations about criminal procedure but every conviction with a colorable Constitutional argument. The result, then, would not be a more efficient criminal procedure law but, at least, a more federalized criminal procedure.

Turning to expected rates of victory, it is striking that in all compositions—from the all-Democratic-appointee Vinson composition, to the heavily Republican-appointee courts of 1972 to 2010—the outcomes skew conservative and the rate of conservative outcomes is almost constant. Because the Court, through the process of granting *certiorari*, determines its own docket, any conclusions will not reflect the decisions of plaintiffs and defendants but the process of granting *certiorari*. A process that selected disputes for being on the cusp of a divided court, should tend to produce outcomes that would be more evenly split. That in all compositions a conservative skew appears likely suggests additional complexities in the selection of disputes.

26. *Carter v. Illinois*, 329 U.S. 173, 175 (1946) ("[T]he Due Process Clause has never been perverted so as to force upon the forty-eight States a uniform code of criminal procedure.")

27. *See, e.g.*, Antiterrorism and Effective Death Penalty Act of 1996, Pub. L. No. 104-132, 110 Stat. 1214 (1996); Prison Litigation Reform Act of 1996, 42 U.S.C. § 1997(e) (1996) (both imposing procedural requirements designed to limit litigation).