A Practical Procedure for Detecting a Partisan Gerrymander

Theodore S. Arrington

ABSTRACT

The United States Supreme Court may be open to reconsidering the standards for judging the constitutionality of partisan gerrymanders. This article presents a workable criteria for determining when districting arrangements so distort the process of translating votes into seats in a legislature that the process or the redistricting plan rises to a constitutional violation. The procedure uses an adjusted normal partisan vote (ANPV) measure to determine the number of seats that the preferred party would receive when the vote is equally divided between the parties and how that distribution of seats would change as the ANPV is adjusted up or down. This procedure would show that a gerrymander is long lasting, severe, and intentional.

Keywords: redistricting, gerrymander, normal vote, seat/vote relationship, 14th Amendment, partisanship

The United States Supreme Court may be open to reconsidering the standards for judging the constitutionality of partisan gerrymanders. In *Whitford v. Nichols*, a three-judge federal district court rejected a motion to dismiss a typical gerrymander claim. And in *Shapiro v. McManus*, the Supreme Court unanimously allowed a First Amendment challenge to Maryland’s congressional districts to move forward. Do these cases suggest new guidelines for measuring a gerrymander that would be different from those put forth in *Davis v. Bandemer*? I think not.

The basic problem is the same whether one sees a gerrymander as restricting free speech, as expressed by voting, or denying some voters equal protection under the law. That basic problem is defining workable criteria for determining when districting arrangements so distort the process of translating votes into seats in a legislature that the process or the redistricting plan rises to a constitutional violation. I believe a standard that defines a violation of free speech would also define a violation of equal protection, and I cannot imagine a practical standard based on voting data that would apply to one but not the other. The Maryland and Wisconsin cases are not constitutional law—yet—and do not provide any guidance for a framework for a standard that we do not already find in *Bandemer*. Nor does the pairing of First and Fourteenth Amendment claims by plaintiffs in previous gerrymandering cases give any hint that a different standard would apply to one amendment but not the other.

In *Bandemer*, the Supreme Court ruled that a partisan gerrymander is justiciable as a violation of the Fourteenth Amendment of the United States Constitution, but a realistic standard for detecting an unconstitutional gerrymander has not been developed. The Court or the Congress must develop such a standard, just as they have done in the area of voting rights for minorities through the Voting Rights Act and hundreds of court cases defining impermissible use of race in redistricting, voter registration, and other aspects of elections.

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1Hereinafter the word “gerrymander” will mean a partisan gerrymander, unless otherwise specified.

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That there should be a workable First and Fourteenth Amendment standard for gerrymanders is wholly appropriate because the arrangement of the districts is a quasi-constitutional provision. The districting becomes an essential part of the “rules of the game” at least for the duration of the decade (Cain 1984, 5–6; Butler and Cain 1992, 3–4). Racial aspects of districting have been central to judicial action since the 1960s because of the centrality of race in American politics. But I would argue that partisanship is at least as important to representative government. As Schattschneider (2004, 1) has written: “Modern democracy is unthinkable save in terms of parties.” And partisanship in American legislatures has increased greatly since the 1970s (Muirhead 2006; McCarty, Pool, and Rosenthal 2006; Jacobson 2009, 254). Moreover, Jacobson (2009, 5), among others, has shown in detail that voters also show signs of growing partisan loyalty and ideological consistency.

That the Supreme Court has been seriously frustrated on gerrymandering questions is not surprising. These cases are fraught with political implications, which cause the Court to be cautious. We find a parallel to this pattern in voting rights cases where the Court often speaks with a plurality opinion based on a five to four vote, even on landmark cases such as Thornburg vs. Gingles. A majority on the Supreme Court has been unable to agree on finding a gerrymander, other than their unanimous decision in Cox v. Larios.

While that case is disguised in one-person-one-vote clothes, the essence of the facts in that case is that the Georgia Legislature used relatively small deviations from equal population to systematically under-populate Democratic districts and over-populate Republican districts. These deviations were well within the limits the Court has previously allowed in many other cases. It is the cumulative effect of these, seemingly small, deviations that made the plan unconstitutional, not the size of the deviations. The systematic use of these small deviations created a clear distortion of the seats/votes relationship. It is true, however, that there were also racial and regional distortions produced by these population deviations. In Larios, the Court had a clear statistical pattern to “hang their hat on.” I believe this unanimous opinion provides hope that it is possible to convince at least a majority of the justices that a plan is a gerrymander based on how underlying, long-lasting, partisan voting tendencies are allocated among the districts. I suggest that the procedures in this article can give the Court similar “hard data” to justify declaring some redistricting plans to be unconstitutional.

The plurality opinion in Bandemer gives reasonable guidance as to what is required to prove that a particular district arrangement is a gerrymander, and I will use this opinion as a framework for this article. A gerrymander must be 1) intentional, 2) predictably long lasting in its consequences, and 3) severe (Grofman 1990, 4).

In my view the most appropriate basis for determining the presence or absence of a gerrymander is a seat/vote analysis using an adjusted normal partisan vote (ANPV). Such a standard might not be the only one presented by plaintiffs in gerrymander litigation, but I think it would be a necessary part of their case. Political scientists have long defined a gerrymander as districting in which one party systematically receives significantly more seats than its votes entitle it to. The trick is determining that entitlement, and whether any deviation from that entitlement is severe, long lasting, and intentional.

While there are a number of “signs” that a districting plan might be a gerrymander, these signs are not reliable indicators. In addition to intent (discussed below), the other signs of a gerrymander are deviations from what are called “traditional districting principles” which include state constitutional requirements. The most common deviations from

6542 U.S. ____ (2004). There are, of course, many cases in which the Supreme Court has declared districting plans in violation of the Fourteenth or Fifteenth Amendment or the Voting Rights Act because they fail to provide some racial minority group or groups an equal opportunity to elect representatives of their choice.
7There is at least one other case where the federal courts have found an election arrangement to violate the equal protection clause of the Fourteenth Amendment based on partisanship alone: Republican Party of North Carolina v. Hunt, Civil Action No. 88-263-CIV-5 (E.D. N.C. 1996). That case involved using statewide elections, rather than district elections, to submerge Republican voters; and it was not appealed to the Supreme Court.
8Morrell (1990, 214; 1982, 367) argues that, from the perspective of a geographer, proof of a gerrymander requires more than a biased seat/vote ratio. But he agrees that the seat/vote perspective is crucial.
9An unequal pairing of incumbents might also be a sign of a gerrymander.
traditional districting principles are 1) oddly shaped districts (the classic sign, for which there is no agreed-upon measurement\textsuperscript{10}); 2) systematic population deviations between districts (as in Larios); 3) splitting-established local political jurisdictions (especially counties); 4) failure to use significant physical boundaries as district borders; and 5) dividing “communities of interest.” The problem is that all of these deviations may be avoided in a plan that significantly distorts the seat/vote relationship. And constructing a plan in which the seat/vote relationship is close to ideal might require violation of one or more traditional districting principles even state constitutional provisions.

Community of interest is especially subject to manipulation because it is so amorphous. A summary of some of the possible criteria for a community of interest might be natural physical boundaries and barriers, local jurisdictional boundaries, settlement patterns, combination of central city with surrounding hinterlands, ethnicity, culture, race, language, religion, class or socio-economic status, transportation patterns, water drainage areas, urban settlement, rural settlement, voting patterns, occupations or industry, population age, place names, trading or shopping patterns, shared history, neighborhoods, media markets, and self-classification based on surveys.\textsuperscript{11}

Clever legislators sometimes use one or more of the traditional districting principles to cover a naked gerrymander. For example, Texas has used its “whole county” provisions in the Texas Constitution to camouflage and justify a gerrymander in Texas House redistricting.\textsuperscript{12} The Voting Rights Act might even be used to justify a gerrymander. The North Carolina General Assembly\textsuperscript{13} and the Alabama Legislature\textsuperscript{14} have recently argued that Supreme Court interpretations of the Voting Rights Act force them to “pack” black Democratic voters in a few districts. This packing gives Republicans a larger majority in the state legislature and congressional delegation than their votes would entitle them to. Here I define “packing” as concentrating more minority voters in minority districts than is necessary for them to have a reasonable opportunity to elect representatives of their choice based on established voting analysis. “Packing” is, of course, one of the classic techniques of the gerrymander; the other being “cracking.” Cracking is defined as splitting possible majority voting blocks into two or more districts so that they are unable to elect a candidate of choice in any of them.

In those instances where violations of traditional districting principles (e.g., non-compact districts) are a sign of a gerrymander, the courts should consider them as additional support for the presence of a gerrymander based on a seat/vote analysis or other statistical techniques. This would be analogous to the way in which the so-called “Senate Factors”\textsuperscript{15} are considered to be backup of a showing of a violation of the Voting Rights Act based principally on analysis of election data. Senate Factors are things like racially biased delivery of public services or the use or racial appeals in elections.

\section*{INTENT}

There is an extensive literature on proving intent before the federal courts in racial bias cases. This literature is based largely on an “\textit{Arlington Heights} analysis.”\textsuperscript{16} This type of analysis is relevant to proving intent in gerrymandering cases with some modifications from race to party. Grofman (1990, 32–3) lists ten points of evidence that were presented to the Court in Bandemer, which caused the Court

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\textsuperscript{10}McDonald 2007, 677; Young 1988, 105; Maceachren 1985; Horn, Hampton, and Vandenberg 1993; Morrill 1990, 215; Backstrom 1982, 49–50; Taylor 1973A and B; and Niemi et al. 1990.

\textsuperscript{11}See, for example, Morrill 1990, 215; Thompson 2002; Leib 1998; Altman, MacDonald, and McDonald 2005, 57; Forest 2001, 2004, 425–8; House 1970; McDonald 2007, 677; Malone 1997, 481–2; Dixon 1968, 446.


\textsuperscript{16}Arlington Heights v. Metropolitan Housing Development Corporation, 429 U.S. 252 (1977). A list of selected references on proving intent is in the Appendix. As a good example of dealing with intent in racial voting rights cases see, Garza v. County of Los Angeles, 918 F. 2d 763, 779 (9th Cir. 1990) (Kozinski, J., concurring and dissenting in part).
There are direct parallels in an Arlington Heights analysis to the points in Grofman’s list.

Here are the points presented by the plaintiffs in Bandemer as listed by Grofman: 1) the plan was drawn out of public view; 2) the plan was rushed through the legislature with little advance notice; 3) the vote took place on the last day of the session, when other business items took attention away from the plan; 4) the districting was completely under the control of the Republican majority; 5) the Republicans hired an outside partisan consultant to draw the plan without local input; 6) no public hearings were held on the plan; 7) the procedures for adopting the plan allowed no minority party input; 8) the vote to adopt the plan was along party lines; 9) legislative leaders admitted the aim of the plan was partisan; and 10) there was no clear policy statement about the criteria for drawing the plan other than party advantage.

In Texas v. United States of America in the United States District Court for the District of Columbia,17 the court heard testimony on procedural irregularities equivalent to many of these points cited by Grofman in his analysis of Bandemer. Based in part on such testimony, the D.C. District Court found evidence of intent to racially discriminate in the way Texas drew districts for the Texas House of Representatives and ruled that the congressional districts were drawn with racially discriminatory intent.18

As Grofman points out (1990, 33), the plurality opinion in Bandemer stated: “As long as redistricting is done by a legislature, it should not be very difficult to prove that the likely political consequences of the reapportionment were intended ([Bandemer] p. 2809).” This observation has even greater force today, with the advances in geographic information systems (GIS). The courts have been hearing evidence on redistricting plans and voting rights districts generated by GIS for over 30 years now. Such evidence is not usually seriously questioned, because all parties in the litigation can replicate any GIS evidence based on data (e.g., the U.S. Census, and official voting records) provided to the court. Greene (2000) and Forest (2004) use Texas as an example of how GIS both facilitates and limits the redistricting process, and Butler and Cain (1992, chapter 3) also discuss this issue more broadly. To put it in other terms, the partisan effects of any plan will be known when passed with the use of modern GIS technology. If known, can we say they were “intended”? Even if there are other motives involved—as there always are? I think the answer to this question is whether there are constitutionally permissible reasons for the way the plan is drawn (e.g., Voting Rights Act or traditional districting principles), which make severe and long-lasting partisan bias in the plan necessary.

Partisanship need not be the only intent, or even the most important one. When examining the question of intent, one should determine whether there is another reasonable and complete explanation other than partisan bias for the way the enacted plan was drawn. If there are other possible rationales, one must weigh the importance of them. Does a nonpartisan explanation outweigh the partisan effect? Were there nonpartisan alternatives reasonably available? All explanations, not just partisan ones, must be examined. What explanation has the best surviving evidence? Motives may be intertwined, but if partisanship is part of the mix, that is highly relevant evidence of intent. Legislative enactments always involve multiple overlapping motivations; but if the legislative majority acted knowing the severe, long-lasting bias, this is critical in the intent analysis under the First and Fourteenth Amendments. Such analysis is analogous to the way the courts have dealt with intent in racial discrimination cases.

I do not believe there is sufficient justification for requiring a showing of intent to prove a gerrymander. The Supreme Court has shown undue deference to redistricting authorities in this matter. The Court eventually had to admit that legislatures could not be trusted to determine apportionment. A severely malapportioned districting plan is unconstitutional regardless of intent. When the Voting Rights Act was renewed in 1982, the Congress provided that intent is not required in Section 2 cases—a showing of effect is sufficient. Surely, a severe and long-lasting partisan bias in the way the districts are arranged should have a judicial remedy, even if the violation was accidental. While I think it should be unnecessary, proving intent is probably not a barrier to eliciting judicial relief from gerrymanders. Questions involving partisan effect, severity, and length of effect may be more difficult.

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18This decision was vacated by Shelby County v. Holder, 570 U.S. ____ (2013).
LONG-LASTING EFFECTS

Some may assume that the effects of a redistricting plan can last no longer than ten years because of the requirement to redistrict after each decennial census to achieve one-person-one-vote apportionment. A legislative majority elected under a gerrymandered system, however, may be in a position to gerrymander the districts following the next decennial census and propagate the bias indefinitely, barring judicial intervention. If the gerrymander is severe, there may be no remedy at the ballot box as the Court has assumed. Thus the need to implement a strong, enforceable, legal standard for gerrymanders.

Because of the long-lasting criterion, the legal challenge to a gerrymander must be presented soon after the districts are drawn. This means that the system to detect gerrymanders must use data available before any elections are held under the redistricting plan based on underlying stable partisanship, not the results of one election. If the legislative body has four-year terms, a redistricting redistricting right after the decennial census (in a year ending in 1 or 2) might only cover the next two elections: e.g., elections in years ending in 4 and 8. If the body has two-year terms, the redistricting might apply to five elections: e.g., elections in years ending in 2, 4, 6, 8, and 0). An effect for two or more future elections covering a decade must be considered sufficiently long lasting. If more than two future elections are required by the Court, then a gerrymandering claim is precluded in principle in many jurisdictions. The ten-year census cycle and four-year terms make a two-future-election standard necessarily sufficient. As at other points in this article, I make no claim that such a standard exists in the current law. I am, rather, setting forth a standard the court or the legislature must adopt to make gerrymandering justiciable in practice. Litigation brought several years after the last census might reasonably be considered untimely because the specific districting plan challenged would only apply to one election until a new plan is drawn after the next U.S. Census.

MEASURING EFFECT

The seat/vote relationship

The seat/vote relationship has a long and distinguished history in the study of politics in single-member district systems such as Great Britain, Canada, and the United States. Scholars characterize the seat/vote relationship by the “swing” and the “bias.” Scholars such as Niemi (1982, 37–38), Tufte (1973), and Arrington (2008) define bias as an asymmetric relationship between votes and seats. In an asymmetric relationship, a party can receive a majority of the seats without a majority of the votes, which would be bias. Symmetry also means that if the Democrats can get about 60% of the seats with only 55% of the votes, then the Republicans should also be able to get about 60% of the seats if they get 55% of the votes (also see Grofman and King 2007).

Notice that a single-member district system will not usually yield proportional representation. Although the relationship between votes and seats is an “S” curve in a two-party system, the relationship tends to be more or less linear if both parties are receiving between 40% and 60% of the vote. In that range, where almost all elections in the U.S. are fought, the majority party usually receives a “bonus,” getting a larger majority of the seats than votes. This is, in my view, a useful feature of such election systems, not a bias in the system. The bonus would provide the majority party with a reliable majority to govern in the legislature. Bias comes only if the relationship is not roughly symmetrical.

The “swing,” “swing ratio,” or “slope of the regression line” is simply the extent of change in the number of seats between the parties as a consequence of a change in the vote in the competitive range. In most districting arrangements in two-party systems, the swing will be greater than 1.0—a party will gain more than one percentage point of the seats with a gain of one percentage


Gelman and King (1990, 1994A and B) and Kastellec, Gelman, and Chandler (2008) disagree, arguing that any deviation from proportional representation should be labeled a bias. I will not use their definition of this term because deviation from proportional representation is almost inevitable in single-member district systems.
point of the votes. This leads to a *bonus* for the majority party.

In a perfectly symmetric districting arrangement, the parties should each receive one-half of the seats when the vote is split 50/50. Therefore, the partisan nature of any districting plan has two aspects. First, what would happen when the jurisdiction-wide vote is evenly divided? And second, what would happen as the vote changes away from the 50/50 mark? For clarity, I will refer to a deviation from an even split in the seats when the vote is 50/50 as “equality bias.” One should also note the degree of swing to determine whether each party has a reasonable opportunity to gain a majority of the seats when that party has a majority of the votes.

A sports analogy is useful to understand the concept. The purpose is to determine what a “level playing field” for the political parties would look like. The parties’ candidates are the “players” and form opposing teams. One party (team) may receive more votes and more seats because it has better candidates, financing, strategy, or policies. This is surely not unconstitutional. A party may get more votes and more seats because the underlying partisanship of the jurisdiction favors it. There is nothing unconstitutional about this either. But the way the districts are drawn should not determine which party wins the most seats—the districts should be a level playing field.

Each proposed district plan should be tested by an equally divided jurisdiction-wide two-party vote. This measure indicates how the seats would be allocated between the parties by those districts in that hypothetical situation. This is the test for equality bias. We then have to mimic the conditions where the two-party jurisdiction-wide vote varies over a reasonable competitive range—40% Democratic to 60% Democratic. We can then see if there is swing in the system and any extreme asymmetry in the way each party is treated by the plan when that party is in the majority. Notice that we would be doing this without taking into account the difference in the players on the teams. This is appropriate in designing the “playing field.”

*Measuring the normal partisan vote*

The first task is to measure the normal partisan vote in all the precincts in the jurisdiction. Political scientists have long understood that the underlying partisanship in the electorate changes slowly except under very unusual circumstances, such as the Civil War or the Great Depression (Berelson, Lazarsfeld, and McPhee 1954; Key 1955; Converse 1966). To measure the normal vote, one would use jurisdiction-wide contests, not the elections for the office for which the districts are designed. In other words, we do not take account of the differences in the players that previously competed in the old districts. For congressional districts and the state legislature, statewide offices would be used. For local jurisdictions, statewide offices can be supplemented with countywide or regional offices. One would use the votes for these jurisdiction-wide offices only during the previous decade because the normal vote may change over a long time period (Miller 1979). A decade of elections for a variety of offices should provide a sufficient number of recent contests to measure the normal vote in most places. Some political scientists have suggested using a longer time frame, but I would not go back further than ten years unless there are so few jurisdiction-wide elections that more data are needed.

Constructing the normal vote would differ depending on the characteristics of the jurisdiction. Care should be taken in determining which offices are combined to measure the normal vote, but it is necessary to have a wide range of offices. The more obscure the office, the better it would measure the normal vote because many voters use the partisan heuristic when they have no other available information. Significant third-party efforts in particular contests would disqualify those contests from inclusion. If a state has a long ballot and many minor offices, one could measure the normal vote without the top of the ballot offices (president, senator, governor, etc.), where the personality of the candidates may cause variation in the vote across precincts. If the office for which the districts are being designed has a four-year term, the elections selected to measure the normal vote should be, when possible, those that are elected in that sequence—presidential years, off-years, or odd numbered years. Unchallenged contests should, of course, not be used; but one would also eliminate any contest where the opposition did not have a serious candidate. Party registration, even in those states that have totally closed primaries, is not a

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21 For convenience, when necessary, I will express the two-party vote in terms of the Democratic percentage.
reliable indicator of the normal vote (Arrington and Grofman 1999).

Each state and local jurisdiction will have different jurisdiction-wide contests that could be used in the calculation. I doubt that experts testifying in gerrymandering litigation will vary much in their selection of offices to use, and the adjustments (see the next section) will probably make selection variations moot.

Once an appropriate set of jurisdiction-wide offices is selected, it is a simple matter to add up all of the votes for both major parties in the jurisdiction and in each precinct. It doesn’t matter whether this is expressed as a total vote of all the selected elections or as an average.

There are two data problems requiring solutions. First is the accounting of absentee voting, early voting, and voting in regional centers in lieu of individual precinct voting places on Election Day. Some states tabulate absentee votes and/or early votes separately from the precinct vote. Voting at regional centers on Election Day may not be tabulated by precinct either. As early voting and “no excuse absentee voting” have increased, unknown biases have been introduced into the accounting of the precinct vote, if these early votes are tabulated separately. Is there a systematic difference in the partisanship or turnout rate of people who vote on Election Day as opposed to those who vote early or absentee? I do not think there is adequate study of this question.

The absentee, early, and regional center vote totals have to be combined back into the precinct vote for the normal vote calculation to be reliable. If the early, absentee, or vote in regional centers is not tabulated by precinct, it can still be combined back into precinct totals later. It is simply a matter of keeping an indication of the precinct of the voter on the ballots or in the electronic record. This would not imperil the secrecy of the ballot and is already the practice in some states.

The second problem is that the districts may be drawn with split precincts. This may be necessary to achieve one-person-one-vote population equality, especially for congressional districts that are often drawn to zero population deviation. It is rarely necessary to split more than a few precincts to achieve population balance, even for congressional districts. Recently, however, some states have made splitting precincts a priority. In 2011 the Texas Legislature split 412 precincts in drawing their plan for the Texas House of Representatives, and 518 in their congressional plan. The North Carolina General Assembly split 68 precincts in drawing their congressional plan, 257 in the state senate plan, and 395 in the state house plan. The Alabama Legislature split 164 precincts in creating the state senate plan and 423 in the state house plan. These splits in all three states were mostly along racial lines (see testimony presented in the litigation cited in footnotes 12, 13, and 14). Since all of these plans are badly gerrymandered (in both partisan and racial terms) and there may be no need to slice up this many precincts to reduce population deviations, they are good examples of recent unfortunate practices.

It is easy to explain how to deal with split precincts when calculating the normal vote, although it is easier said than done. No data on voting exists below the precinct level because votes are tallied at that level.22 The only information that line drawers and legislators have on census blocks within precincts is data on total population, racial identification, and Hispanic identification from the preceding decennial Census. If precincts are split for partisan purposes, it is done using racial or ethnic data as a surrogate for partisanship.

If the different split parts of the precinct are similar in racial and ethnic makeup, one can reliably allocate the normal vote to the parts of the precinct on a pro rata basis using voting age population. The relevant data to allocate the normal vote between parts of a split precinct when the parts differ in race and ethnicity is the voting pattern by race and ethnicity. This also makes sense given persistent racial bloc voting (McCarty, Poole, and Rosenthal 2006).

The kind of standard polarized voting analysis approved by the federal courts (including the Supreme Court) hundreds of times in voting rights cases can be used to estimate turnout rates and partisan voting rates for different racial and ethnic groups in the jurisdiction. There are two extant techniques used for this purpose. The oldest is the two-equation method of ecological regression, recommended by

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22It is possible to have party registration data by census block if the state has a closed primary and a geo-location procedure is applied to the voters’ addresses. Spanish surname analysis can be applied to the lists of registered voters. But these procedures are very expensive, rarely used for redistricting, and party registration is not a good measure of the normal vote.
Grofman, Handley, and Niemi (1992). The newer, more sophisticated method is ecological inference (King 1997). Once the turnout rates and the normal partisan vote of the racial and ethnic groups in the jurisdiction are estimated, these figures can be applied to the precinct splits to allocate that normal vote in each precinct among the split parts.

The normal vote for each district in any proposed redistricting plan is calculated by simply adding together the normal vote for the Democrats and the Republicans in each precinct and precinct split that comprise that district. Then one can calculate the Democratic percentage of the normal vote.

**Adjusting the normal partisan vote**

The jurisdiction-wide normal two-party vote will rarely be exactly 50% for both parties. So, the next step is to adjust the normal vote jurisdiction-wide to 50%. The normal vote in each proposed district is adjusted to the same degree as the adjustment to the jurisdiction-wide normal vote. If the normal vote jurisdiction-wide were 53% Democratic, each proposed district would have the normal Democratic vote in that district reduced by three percentage points. This provides a reliable estimate of the partisanship of each district if the jurisdiction-wide vote were 50/50 and the strength of the campaigns of the individual candidates in each district are discounted. The determination of equality bias for any plan is simply how many of the districts would each party win in this initial calculation.

This procedure assumes that the party vote in all-proposed districts will move up and down in accord with the changes in the jurisdiction-wide vote. Another way to look at the problem is to ask whether floaters—those who vote for the Republicans in one election but favor the Democrats the next time—are more concentrated in some proposed districts than in others. Careful study of election returns in precincts over many years has demonstrated that, to a large degree, all populations tend to move in the same direction relatively speaking. That is, a good year for Republicans tends to be a good year for them in every precinct in that jurisdiction relative to the usual Republican vote. Similarly, a good year for Democrats tends to be a good year for them in every precinct in that jurisdiction relative to the usual Democratic vote.

There is certainly precinct variation for some offices in particular years—e.g., the vote for Obama was higher than usual in minority-concentrated precincts and lower in overwhelmingly Anglo (white, non-Hispanic) precincts in both 2008 and 2012. And those who do targeting for parties and candidates have long known that ticket-splitters (those who vote for some Democrats and some Republicans on the same ballot) are more concentrated in some precincts than in others. But such differences should even out when looking at the normal vote, which averages over several offices and several years, and is then aggregated into districts.  

**Determining swing**

The next step is to measure the swing in each proposed plan. To do this one calculates the ANPV for a jurisdiction-wide vote of 40%, 41%, ..., 60%, using the same procedures as described above. This can be presented as a simple graph showing the relationship of seats and votes over this competitive range. This exact procedure was used in presentations before the special master appointed by the New Mexico Supreme Court to determine the redistricting of Congress, State House of Representatives, and State Senate in 2011. The special master was necessary because the Republican governor and Democratic-controlled legislature could not resolve their differences. The seat/vote graph prepared for the House plan adopted by the special master is Figure 1 (below).

Once the seat/vote relationship is presented as a series of data points, various statistics can be computed. For the adopted House plan shown in Figure 1, the relationship of the percentage of the Democratic seats won to the ANPV Democratic percentage of the vote is very strongly linear ($R^2 = .98$), especially in the 45% to 55% range. Also notice the slight “S-curve” of the total relationship. The swing ratio (slope of the regression line) is a strong 2.08. This means that a gain of one percentage point of the votes for either party results in a gain of more than two percentage points of the seats in the House. The equality bias in this plan is zero. That is, if the Democratic vote statewide were 50%,

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23Private communication between the author and Professor James G. Gimpel (University of Maryland) and Kim Brace (Election Data Services, Inc.) supports the conclusion that there is no published research explicitly on precinct compared to jurisdiction-wide normal vote. They also agreed that the assumption that districts would vary little in their response to the jurisdiction-wide normal vote is reasonable. Both of these individuals are well acquainted with these kinds of data.
the Democrats would win 35 of the 70 seats in the House, and the Republicans would also win 35. Notice that the relationship is not perfectly symmetrical. Because the equality bias and swing were good, the special master had no reason to be concerned about this minor asymmetry.

In the 2012 elections the Democrats won a majority of the seats under this plan, but in 2014 the Republicans won a majority for the first time in 60 years. The Democrats had dominated previous redistricting cycles going back at least that far.

**SEVERITY**

The Bandemer plurality opinion specified that a gerrymander must be severe. It is probably rare to have a plan with the exact equality bias of 0, especially if the legislature has an odd number of members. That would require an even split with one or more “swing” districts having exactly 50% ANPV when the jurisdiction-wide ANPV is 50%. Exact symmetry is also highly unlikely. Therefore, the question is: how much deviation from the ideal defines a severe gerrymander? There is no “natural” level of equality bias or lack of swing that can be called “severe.” The definition must be legally determined. It is not unusual for the courts to establish a “bright line” legal standard or limit in the area of voting rights and districting or in other areas of the law. An example of this can be found in the area of one-person-one-vote. Below the congressional level, a total deviation between the largest and the smallest district of less than 10% of the size of the mean district is almost always considered to be constitutionally acceptable by the courts. The exception to this comes only when small deviations are used systematically to favor or oppose protected voters as in Larios. The figure of 10% is totally arbitrary, but reasonable and practical. The Supreme Court established an arbitrary standard in Roe v. Wade, with their trimester distinctions—again, a workable and reasonable but arbitrary standard.

The establishment of such a standard would almost certainly not be the result of a single Supreme Court fiat. Rather, it would arise over a series of cases in which experts and voting rights attorneys would perceive, over time, what level of severity is acceptable to at least five justices and what level is not acceptable. Experts, however, must have some standard in mind when they testify prior to the establishment of a standard by the Court. Here I present what I think the standard might be.

The definition of severe must be practical to measure and seem reasonable and just—giving due

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24410 U.S. 113 (1973).
deference to the redistricting authority while protecting the rights of the voters whose party is not dominant in the redistricting process. One reason the Court has been unable to agree on a gerrymander standard may be because they are waiting for some “natural” or “obvious” standards to appear. This is not going to happen. The Court or the legislature must step in and set the standard between what is permissible and what is not. Neither statistics nor the law in other areas will provide the needed standard.

**Equality bias**

One seat or one percent of the size of the assembly, whichever is greater, is an appropriate standard for severity in equality bias. When the ANPV is 50%, the parties should either be splitting the districts equally, or one party can have a one-district majority or a one percent majority. Even when the legislative body has an even number of seats, a one-district majority should not be considered severe. Suppose a legislative body has 50 members, a majority with 26 seats should not be considered severe in terms of equality bias.

What if the favored party has more than the one seat or one percent majority when the ANPV is exactly 50%? Such a plan still might not have severe equality bias, if there are swing districts with ANPV very close to 50%. In such cases, a different one-percentage-point test should be applied. If the ANPV can be moved in the direction of the disfavored party by less than one percentage point, and this brings the seat division below the severe level, then the plan does not have severe equality bias. For example, suppose the Republicans have a two-seat majority at ANPV 50%. But suppose that when the ANPV Democratic vote is 50.9%, the Republican advantage is reduced to the level of one seat. In this situation we should not consider the plan to have severe equality bias. The presence of one or more swing districts right at the ANPV 50% level makes such a plan acceptable.

In all congressional delegations, all local units of government, all upper houses of the state legislatures, and the unicameral Nebraska legislature, a one-seat majority when the ANPV is 50% should be the limit. For the lower houses in Connecticut, Georgia, Missouri, New York, Pennsylvania, and Texas, a two-seat majority would not be considered severe because that would be less than one percent of the total membership of those houses. In the New Hampshire lower house, a three-seat majority would still not be considered severe, because that body has 399 members.

This may sound like a restrictive definition of severe. But this is the limit for when the ANPV is 50%, not necessarily what we would expect to see as the result of an actual election. There is no way to draw the congressional districts in Massachusetts that would not give the Democrats almost all the seats. Nor is there any imaginable congressional district arrangement in Alabama in which the Republicans would not win all of the seats, except in the one majority black district. But once we adjust the one-sided partisan vote in these states to the ANPV of 50%, we should see a division of the districts that is either evenly divided or has, at most, a one seat majority for the Republicans in Alabama and a one seat majority for the Democrats in Massachusetts.

**Swing bias**

It may seem that allowing an equality bias of one seat or one percent at 50% ANPV permits a built-in, narrow but nevertheless effective, majority party dominance. This is corrected by setting an additional standard for swing—plans must comply with the standard for both equality bias and swing bias to be constitutional.

The swing bias standard that I propose is that in the 47%–53% ANPV range, both parties must be able to obtain a majority of the seats. This is another way of saying that the plan must provide at least some swing or marginal districts as measured in these seat/vote measures. If, as we move the ANPV from 47% Democratic to 53% Democratic, only one of the parties receives a majority of the seats, the plan has no swing and should be considered unconstitutional.

Some redistricting plans might provide a “fair” division of the seats at 50% ANPV, but no swing. This might be an incumbent protection gerrymander—an agreement between the parties to divide up the seats in an uncompetitive fashion. This is sometimes the pattern in congressional districting, especially when the governor is of one party and the legislature another. This should be considered just as unconstitutional as a straight partisan gerrymander. Even an equal division of the seats at 50% ANPV is not enough, in my view, if there is no swing.\(^\text{25}\) Incumbent

\(^\text{25}\)Although Brunell (2008), and perhaps some of his coauthors, argue that competition is bad for representation, his position is a minority one among political scientists, political observers, and (I suspect) judges.
Districting involves juggling a number of considerations simultaneously. Legal, geographic, and demographic factors greatly complicate the process of actually designating districts. It follows that plaintiffs challenging a redistricting plan under my suggested criteria must present an illustrative plan that complies with the standards set forth above. The enacted plan cannot be deemed unconstitutional, if a plan cannot be drawn which lacks severe equality bias and has acceptable swing. This would not usually be a problem with state legislative plans. But for congressional plans in states with only a few congressional seats and in local jurisdictions with small governing bodies, it may not be possible to draw a plan that has limited equality bias and acceptable swing. In such situations, the courts should defer to the redistricting authority.

Nor should it be enough, in my opinion, to present an illustrative plan that is merely “better” than the enacted plan. To prevail, plaintiffs must show that the enacted plan does not comply with the standards set forth over time by the courts, and that an illustrative plan does comply fully while generally satisfying traditional districting principles as well as the enacted plan. This is equivalent to the necessity of presenting an illustrative plan in a Section 2 voting rights case to satisfy what is called the “first Gingles precondition.”

As has been the case with the implementation of the Voting Rights Act by the courts,27 the trade-offs between achieving a plan without partisan bias and traditional districting principles will be an ongoing question for the courts. The courts may also continue to require a showing of intent to prove a gerrymander. If so, an illustrative plan that complies with my standards and does a generally good job with traditional districting principles should be presented during the redistricting process. The database showing the normal vote in each precinct should also be publicly available during the process. Those who adopted the plan under challenge would then need to justify rejecting a plan that is not a gerrymander.

**RACE AND GERRYMANDERS**

Efforts to prevent gerrymanders under the First and Fourteenth Amendments should not interfere with the voting rights of racial and ethnic minorities guaranteed under the Fifteenth Amendment and the Voting Rights Act. I do not believe that there is usually a conflict between the two. Hasen (2013) provides an interesting, recent discussion of the relationship of race and party in districting.

Prior to the implementation of the Voting Rights Act (especially the *Gingles* decision), some Democratic Party dominated legislatures cracked or submerged minority concentrations to create gerrymanders that denied both Republicans and minority Democrats fair representation. North Carolina was a good example. This kind of gerrymander is unlikely to be a problem now.

Some scholars have suggested, on the other hand, that Republicans are now aided in creating gerrymanders by the requirements of the Voting Rights Act to construct at least some districts with substantial concentrations of minority voters.28 These concentrations are necessary, to some extent, to give minority voters a reasonable opportunity to elect representatives of their choice even when their first choice happens to be a person of their racial or ethnic identification. A modest concentration of minority voters in a district might be sufficient to assure that minority voters, in coalition with Anglo Democrats, could elect an Anglo Democrat. But a modest concentration might not be enough for a Democrat of a minority race or ethnic group to win the Democratic nomination or the general election—a more substantial minority concentration might be required. In other words, the


27See the line of cases that followed *Shaw v. Reno*, 509 U.S. 630 (1993). But in *Easley v. Cromartie*, 532 U.S. 234 (2001), the Court ruled that strangely shaped districts that appear to have been drawn along racial lines are acceptable, if the purpose was partisan. Presumably, lines drawn to create a plan *without partisan bias* would also be acceptable even with strange shapes.

Voting Rights Act might require some degree of “packing” of Democratic voters at levels that could aid in creating a Republican gerrymander.

Many other scholars, however, have proven empirically that the effect is overstated. To some extent, the problem derive from the way in which Democratic and Republican voters are concentrated geographically, and not with the implementation of the Voting Rights Act per se (Jacobson 2009, 9, 14–15; and Hirsch 2003, 179). There is no question that following the Voting Right Act helps Republicans in the sense that it makes it easier for them to create a gerrymander plan. It also provides a justification for the gerrymander: “the devil (the Voting Rights Act) made me do it.” The Voting Rights Act also makes it more difficult for Democrats to create a gerrymander. However, it is possible to create a plan, in most jurisdictions, that both complies with the Voting Rights Act and would not be a gerrymander as defined above. The concentration of minority citizens in congressional districts was at its height during the period from 1992–2000. Yet the seat/vote relationship during that redistricting cycle was closer to ideal than during any other post-1970 redistricting cycle (Arrington 2010).

If racial and partisan standards are to be compatible in some jurisdictions, however, it may be necessary to avoid over-packing of minority voters. Voting rights districts designed to give minority voters opportunities to elect representatives of their choice should have only the minimum concentration necessary to provide those opportunities. This level of concentration is sometimes less than a majority of the citizens of voting age required in some situations by the Supreme Court in Bartlett v. Strickland.

The occasional conflict between preventing a Republican gerrymander and providing opportunities for minority voters to elect representatives of their choice involves a trade-off between some “substantive representation” for minority voters, who overwhelmingly prefer Democratic candidates, and some “descriptive representation” for them. This distinction was relevant to the Court in Georgia v. Ashcraft, but the trade-off is more complex than the Court seemed to realize.

NONPARTISAN ELECTIONS

All congressional elections and all state legislative elections (except in Nebraska) use a partisan ballot. The party labels are attached to the candidates’ names. But a large percentage of local elections are held without those partisan labels on the ballot. Increasingly, however, the “nonpartisanship” of these local elections (and the legislative elections in Nebraska) is in doubt. Campaigns have become increasingly partisan in these kinds of elections, and the popular vote sometimes follows suit. Once elected, these officials behave as partisans with party-line votes and partisan rhetoric on important issues.

If the electorate exhibits partisan voting patterns, it is appropriate to apply the standards set forth above in the creation of districts for these offices, even though the party label is absent from the ballot. Once these offices become partisan in all but name, it becomes necessary to consider partisanship in the construction of the districts. It should not be difficult to determine the partisanship of candidates elected without partisan labels with media accounts, campaign literature, and voting patterns.

REDISTRICTING COMMISSIONS

Would a nonpartisan or bipartisan redistricting commission solve the gerrymandering problem? Careful study by scholars suggests not. There are three types of redistricting reforms commonly proposed: 1) reforms in who draws the districts, which generally recommend a nonpartisan or bipartisan commission; 2) reforms in the process, which
specify certain “neutral” (i.e., nonpolitical) criteria for redistricting; and 3) outcome-based reforms which require specific partisan criteria for the districts. Most scholars express skepticism about the first two kinds of reforms. McDonald (2007, 675), for example, has found that redistricting commissions generally concentrate power in the hands of legislative party leaders. Johnson (1982), Morrill (1982, 366–367), and Dixon (1968, 19) agree that plans drawn by independent commissions may have severe partisan bias, although Shelley (1982) and Mann (2005) still recommend them. Kogan and McGhee (2013) report mixed results from the recent California experience with a commission when they directly compared the commission plans with the previous legislatively enacted plans.

The use of a commission may mask a gerrymander. In some cases commissions may be forbidden to use partisan data in the construction of districts, but this by no means assures an unbiased result or that any partisan bias would be unknown when the plan is enacted. Even a well-intentioned commission may accidentally create a gerrymander, if partisan voting data are not specifically used to test alternative plans. Nevertheless, the use of a nonpartisan or bipartisan commission to do redistricting may be superior to legislative enactment because legislators have obvious conflicts of interest.

There is more general support among political scientists for specifying non-partisan outcomes, such as the approach of Robert Dixon (1982, 1968) in using political data purposefully to construct districts that have low equality bias and provide for a reasonable number of swing districts.35 The Supreme Court has specifically ruled that partisan data can be used to create unbiased redistricting plans in Gaffney v. Cummings.36 I infer that this would still be the position of the Court from a reasonable interpretation of Easley v. Cromartie.37

**CONGRESSIONAL ACTION**

Article I, Section 4 of the Constitution gives Congress the power to make or alter state regulations of the “Times, Places, and Manner of holding Elections for Senators and Representatives.” For example, several decades ago the Congress provided that U.S. Representatives must be elected in single-member districts. Prior to that, states could elect several members statewide. Other provisions have been enacted from time to time that affected how districts were drawn—for example providing for contiguity in districts (Altman 1998). Moreover, Section 5 of the Fourteenth Amendment provides that “The Congress shall have power to enforce, by appropriate legislation, the provisions of this article.” While it seems unlikely in the current hyperpartisan atmosphere in Washington, the Congress could provide the standards for determining gerrymanders that the Courts would then enforce. Provisions such as those outlined above, if provided by congressional enactment, would give the Supreme Court guidance that it seems, at present, unable to develop for itself. This would be analogous to the way the Voting Rights Act provides the standards for enforcing the Fifteenth Amendment.

**OTHER PROCEDURES FOR DETECTING GERRYMANDERS**

Recently, some mathematicians have shown that using computerized GIS makes it possible to draw a very large number of randomly generated redistricting plans and compare the partisan bias in these plans to the bias in an enacted plan.38 By this method, one can determine whether the degree of bias in the enacted plan could have occurred by statistical chance. Showing that the bias did not occur by chance is evidence of intent but is not a measure of whether the bias is severe or long lasting. With such a procedure, ANPV should be used to generate the partisanship of each district in the randomly generated plans and the enacted plan, for the reasons I enumerate above. In other words, I would not use the results of an actual election for the office for which the districts are designed, especially an election held using the challenged plan.

Similarly, an analysis of “wasted votes” might be useful in showing intent. Wasted votes for the Republicans would be all the votes that were cast in districts that the Republican candidate lost, plus all those votes over 50% that Republican candidates received in districts where they won. A similar

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analysis is performed for the Democratic candidates. One can then compare the wasted votes for each party. An asymmetry in wasted votes might be taken as a measure of a gerrymander. In this kind of analysis one might start with the results of an actual election using the redistricting plan under challenge—which I do not recommend—or using something like ANPV. If the results of a single actual election under the gerrymandered plan are used, then the procedure will not tell us whether the gerrymander is long lasting. One would also have a problem dealing with unopposed contests. Moreover, this metric does not tell us how much of an imbalance is severe. The numerical imbalance in wasted votes is an abstract figure, not easily translated into something with understood political significance. That is why, in my proposal, I translate the advantage gained by the gerrymander into seats gained unfairly.

**CONCLUSION**

My approach can provide a framework on which the courts, and perhaps the Congress, could build as we gain more experience with sincere efforts to curb gerrymanders. Perhaps the definition I have given of severe is too restrictive. Should the limits be two seats and two percent for large bodies such as state legislatures? On the other hand, the limits might be too generous. Can the courts reasonably expect the bias to be closer to zero? Should more or less swing be required? My general procedures could be used with a variety of “bright line” standards for severity developed by the courts in a series of cases over time or enacted by the Congress.

In this article I have provided procedures and standards that could be applied to both bodies with small numbers of members (congressional delegations in small states, local councils, commissions, and boards) and larger numbers of members (congressional delegations in the largest states, and state legislatures). Perhaps different standards should be applied in these very different situations. Only experience can sort out these kinds of questions.

When one draws a redistricting plan, one should attempt to have less bias and more swing than “severe” as defined above. But the purpose of this article is to determine the level of partisan bias that would be so egregious that the courts would need to intervene. I think I have correctly identified an appropriate and reasonable level.

Until now, the courts have been reluctant to enter this partisan thicket, with unfortunate results for representative democracy. Gerrymandering reduces public confidence in the political system, exacerbates partisan gridlock, and encourages extremism. It is also unjust and violates the promise of equal protection under the law and freedom of speech.

**REFERENCES**


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APPENDIX: SELECTED REFERENCES ON INTENT


