Unfair Partisan Gerrymanders in Politics and Law: A Diagnostic Applied to Six Cases

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ABSTRACT

We propose standards for detecting partisan gerrymandering as a finding of fact and for determining whether the factual finding is legally significant. The standard is grounded in the U.S. constitutional principle of equal voting rights and is easily manageable inasmuch as its prime analytical feature requires comparing a party's district median vote percentage to its district mean vote percentage. Equally important, the median-mean comparison serves as an effective indicator of whether gerrymandering is the cause of the inequitable treatment. We apply the standard to six alleged cases of gerrymandering of congressional districts and find three cases are not gerrymanders, three are gerrymanders, and one of the three gerrymanders crosses the threshold to legal significance.

INTRODUCTION

GERRYMANDERING HAS BEEN PART of American political lexicon and landscape for more than two centuries. Even more than two centuries on, however, standards for saying what is or is not a partisan gerrymander are unsettled. This is discomforting. It stands in the way of scholarly efforts to draw inferences about various aspects of electoral results, legislative and districting commission efforts to know whether they have drawn a gerrymander, and judicial efforts to adjudicate gerrymandering allegations of majority entrenchment of partisan minorities or, the near opposite, the exclusion of partisan minority voices.

Our purpose is to advance a standard for identifying entrenchment forms of gerrymandering. The proposed standard has four desirable qualities: (1) it focuses on unequal voting rights as gerrymander-

ing's harm; (2) it uses an easily manageable standard; (3) it identifies gerrymandering as the cause of the unequal vote weights; and (4) it distinguishes between a gerrymander as a structural political fact and a gerrymander as a matter of legally significant constitutional offense.

The crux of the matter is the question asked. Instead of asking whether a districting arrangement causes harm to a party because it wins fewer seats than its "fair" share, the question here is whether a districting arrangement causes an unequal weighting of votes for one set of partisan voters versus the other. While the two questions are closely connected, the vote-weight question is the one that leads to a manageable standard, to revelations of whether gerrymandering is the cause of unequal vote weights, and to distinctions between gerrymanders as unfair short-run political advantages versus long-run presumptive constitutional offenses.

We call our approach an *equal vote weight standard*. Its initial step requires establishing that a persistent, one-sided partisan asymmetry bias exists. This means one set of partisan voters has been relatively more packed than the other. Its showing requires nothing more than simple comparisons of a party's median and mean district two-party vote

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percentages. Where the persistent bias usually leads to violations of majority rule for the disadvantaged partisans the fact of a structural gerrymandering effect is established. That is because a known adverse effect on equal vote weights has been caused by the district lines. Two additional conditions are needed to determine whether the structural fact is legally significant. First, violations of majority rule must occur not just usually but every time the disadvantaged party wins a statewide majority of two-party votes. Second, because a constitutional violation requires a showing of intent, asymmetry bias revealed by median-mean comparison must reach a level beyond what partisan residential patterns in a jurisdiction could reasonably be expected to produce.

The second section explains why changing the question to one of unequal vote weights both simplifies developing a standard and enables identifying gerrymandering as the cause (or not) of unequal vote weights. The third section outlines the equal vote weight standard diagnostic tests for identifying unfair partisan gerrymanders as factual and legal matters. The fourth section applies our diagnostic to six cases of alleged partisan gerrymandering of congressional districts—California in the 1980s plus Florida, Michigan, Ohio, Pennsylvania, and Texas in the 2002 round of redistricting. One important result is a showing that the diagnostic distinguishes harmful gerrymanders from false allegations; another is a showing that a factual finding of a partisan gerrymander can be distinguished from gerrymanders that rise to the level of constitutional offense. According to the equal vote weight standard, the California, Pennsylvania, and Texas districts were not gerrymanders. For social science and for neutral mapmaking purposes, where findings of fact are important in and of themselves, Florida, Michigan, and Ohio are partisan gerrymanders. Within our proposed distinction between a factual finding and a finding in both fact and law, only Florida's districting plan can be indicted as a legally significant gerrymander.

SYMMETRY AS A STANDARD

Entrenchment forms of gerrymandering are the prevalent type for almost any sizable congressional delegation or state legislative body. Where they exist they contravene the fairness element in the jurisprudential concept of fair and effective representation.[1] They are constructed by packing one group's voters into a small number of districts with lopsided majorities and distributing its remaining voters among a larger number of districts where they constitute inconsequential voting minorities.

The analytical concept used to diagnose entrenchment gerrymanders is *symmetry*, an equally balanced vote distribution among a jurisdiction's districts. Symmetry is a proverbial goose-gander comparison. In its seat-denominated form it says whatever seat percentage geese can win with X-percent of the vote, ganders win that same seat percentage when they win the same X-percent of the vote (Butler 1951, 330; King et al. 2005; Grofman and King 2007). In its vote-denominated form symmetry says that both geese and ganders win a seat majority with a vote majority. By relying on a comparison between what each of two groups attains with the same relevant resources (votes), symmetry serves as a reality-based benchmark that requires no choice between one versus another political theory in order to establish what constitutes fairness.[2]

To make symmetry work effectively as a reality-based benchmark it helps greatly to redirect the question away from a focus on seats—i.e., unequal treatment of parties with respect to seats won—to a focus on votes—i.e., unequal weighting of votes. Emphasizing seat bias or vote bias is a choice depending on how one reads a common definition of gerrymandering. Justice Scalia, announcing the Court's judgment in *Vieth*, notes that "[t]he term 'political gerrymander' has been defined as '[t]he practice of dividing a geographical area into electoral districts, often of highly irregular shape, to give a political party an unfair advantage by diluting the

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[1]As explained below in a subsection of the third section, entitled, "Prong 3 and 3′: Finding Legal Significance," evaluating the effectiveness element of a districting plan requires its own form of analysis, one that concentrates on extreme forms of cracking. Examples of cracking gerrymanders in congressional elections can be found, but with a few exceptions they appear to be confined to the latter half of the nineteenth century (see Engstrom 2013, 114–121).

[2]When registering his objection to what he considers the Supreme Court's expansive reading of vote denial claims to include vote dilution claims under Section 2 of the Voting Rights Act, Justice Thomas expressed doubt about whether adjudicating dilution claims could ever be workable in practice because they immerse federal courts "in a hopeless project of weighing questions of political theory—questions judges must confront to establish a benchmark concept of an 'undiluted' vote" (Justice Thomas concurring, *Hall v. Holder* 1994, 892). Vote-denominated symmetry sidesteps the need for a political theory that says anything more than all votes are to count equally.

opposition's voting strength'" (*Vieth v. Jubelirer*, 2004, 271 n. 1, quoting *Black's Law Dictionary* 1999, 696). Readers and analysts could emphasize the outcome, giving a political party an unfair advantage and thus making parties the focal point, or they could emphasize diluting the opposition's voting strength, making voters the focal point. As we show, choosing to emphasize voters puts one on a path to a manageable standard. And, next, in one additional step, the application of the standard can be used to reveal whether gerrymandering is the cause of unequal vote weights.

Seat versus vote symmetry

A vote to seat translation function must pass through the 50:50 vote-seat translation point in order for the two parties and their voters to be treated equally. Both the seat- and vote-denominated conceptions of electoral bias agree on that, as shown in Figure 1. The figure depicts a hypothetical situation where the translation of vote percentages into seat percentages misses the 50:50 mark. For the moment we assume that turnout rates are the same in every district (later we take account of partisan related turnout differences). The smaller top graph shows the full-scale vote-seat translation function; the larger graph below it homes in on the area around the 50:50 mark to highlight the difference between recording seat- and vote-denominated biases.[3]

The vertical distance between the Democratic seat percentage and 50, when the vote percentage equals 50, is a measure of seat-denominated bias. Here it amounts to −6.0, because Democrats win 44 percent of the seats with 50 percent of the vote. In contrast, vote-denominated bias is calculated as the horizontal distance between 50 and the vote percentage at the point where Democrats are estimated to win 50 percent of the seats—here, −2.4, because the Democrats need 52.4 percent of the vote to win 50 percent of the seats. As Edward Tufte remarks (Tufte 1973, 542–3, n. 4), the seemingly small −2.4 vote-denominated bias versus the larger −6.0 seat-denominated bias is a consequence of the seat bias being the multiplicative product of vote-denominated bias and the swing ratio (−2.4 * 2.5 = −6.0). Because seat- and vote-denominated biases necessarily run in the same direction— pro-Democratic/anti-Republican or vice versa— the different metrics for recording bias are not per

se consequential. What is consequential is the indication of where the harm resides.

Seat bias has one party winning less and the other party more than an equitable share of seats. We know that because fairness requires an equal division of seats when each party wins 50 percent of the votes—the same rewards for the same relevant resources. Without contesting that fact, the reasoning that leads to and the interpretation that goes along with the conclusion complicates matters. The interpretation holds that the disadvantaged party is improperly deprived of seats as a result of gerrymandering. Or, in different words, (1) a party suffers a seat-harm; (2) its voters are not getting their just desserts in the form of seats; and (3) the supporting group of voters suffers harm because its party is treated unfairly.

Disputes over the causes of seat-denominated bias are liable to arise because the reasoning and interpretation seek to answer a difficult question. Did gerrymandering cause one party to win more and the other party fewer seats than they justly deserve? Answers are difficult because, first, they invite disputes about a large range of reasons why a party fails to win more seats. There might well be no end to discussion and dispute over what otherwise might have happened if one or the other party had, for example, more incumbents, more financial resources, more experienced challengers, a better campaign message, a more popular president, and so on. Second, it allows one to question what is wrong with one party out-maneuvering the other in an attempt to win as many seats as possible. Third, because focusing on seats tends to emphasize the way votes are aggregated into wins and losses, it implies reading the voting right at stake as a group right, which carries with it debates over the "group right" concept as such (e.g., Cox 2007; Pildes 2007).

Changing the question to whether the district line placements cause votes to be counted unequally sidelines those difficulties. A focus on vote weights

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[3]The relationship comes from a logit formulation:

$$\log_e(S^D/S^R) = -.24 + 2.5\log_e(V^D/V^R),$$

where $\log_e(S^{(D)}/S^{(R)})$ are the log odds of Democratic to Republican seats and $\log_e(V^{(D)}/V^{(R)})$ are the log odds of Democratic to Republican votes.
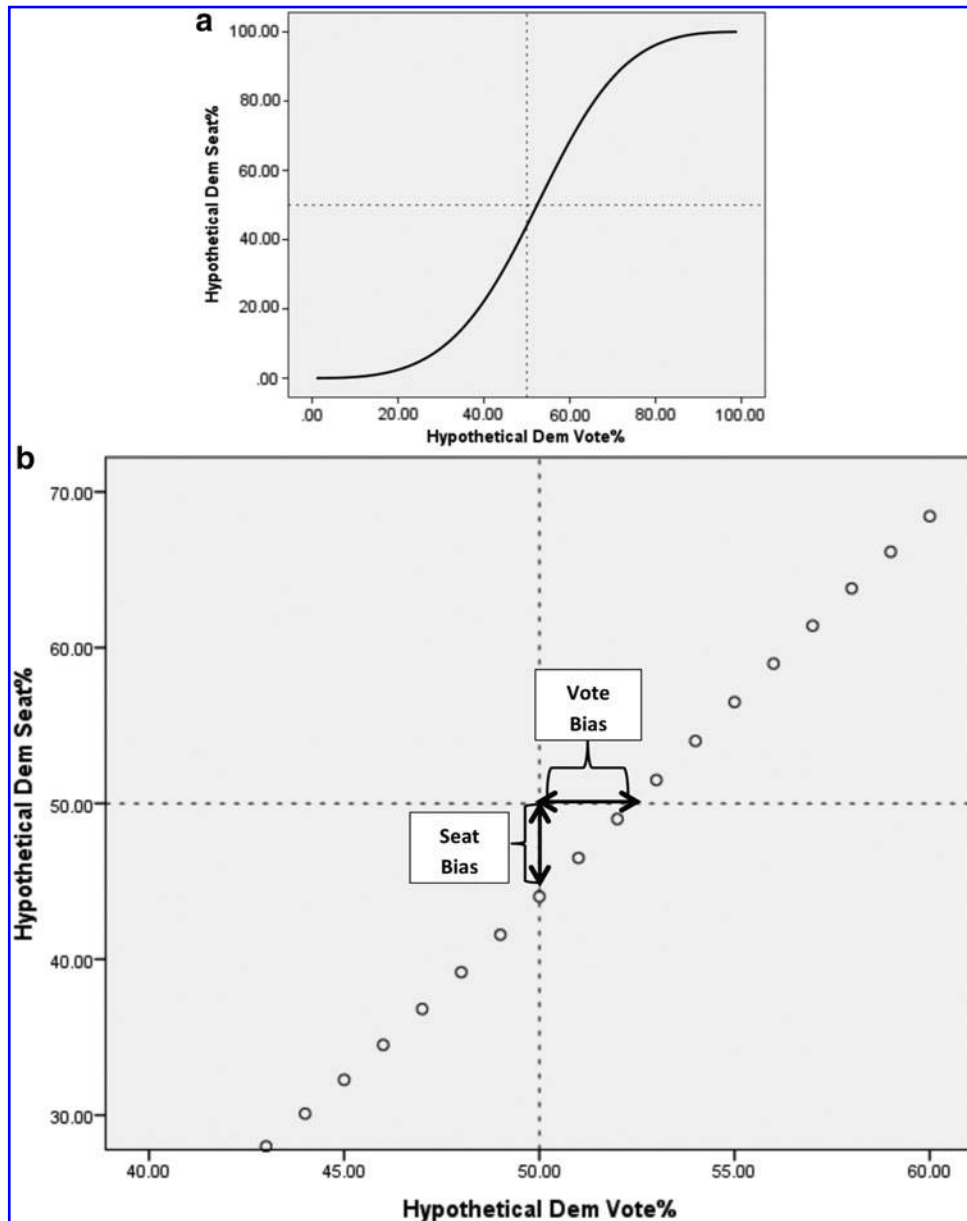
FIG. 1. Hypothetical seat-vote relationship to illustrate seat- and vote-denominated electoral bias. **(a)** Full-scale seat-vote relationship. **(b)** Focused view homed in on seat vs. vote bias.

accepts that one party probably will do all it can to win seats. This is normal politics; no harm there, as long as the mapmakers' decisions do not hamstring one set of voters with diluted vote weights over and against another set of voters with enhanced vote weights. Differential vote weights quash the notion that the election outcome is one that the voters decide. When votes carry different weights, the ultimate outcome of an election is not determined by the voters alone; rather, it is determined by the choices voters make after being conditioned by choices that result in counting some votes as contributing more weight than others. Second, it asks only for evidence about whether all votes count equally and not directly about how many seats constitute a fair share. In its application, a vote weight standard is concerned most especially with a situation where one set of partisans holds majorities in more than half the districts with, say, 47 percent of the vote, implying that the other party carries a minority of the districts with a 53 percent vote majority. That fact reveals the district lines are

assuredly arranged in ways that have not counted all votes equally. The conclusion necessarily follows because any and all violations of majority rule subvert a claim of equal vote weights. Why? Because the principle of majority rule follows from, among other justifications, strict insistence on voter equality (see, e.g., May 1952; Dahl 1989, 139). A jurisdiction-wide voter majority can be turned into an outcome minority if and only if all votes do not count equally. Finally, the vote weight analysis builds a theoretical structure that rests squarely on a substructure formed by the widely embraced concept of an individual right to cast an equally weighted vote.

Manageable standard

A sophisticated and appealing approach to seat-focused symmetry is the one offered by Bernard Grofman and Gary King (Grofman and King 2007; and earlier with others, King et al. 2005, as discussed in *LULAC v. Perry* 2006, 419–20). It relies on Andrew Gelman and King's computationally intensive JudgeIt computer program to make projections about likely seat outcomes using a variety of assumed circumstances as input (Gelman and King 1994; see also Gelman, King, and Thomas n.d.). While tractable for quantitatively inclined social scientists, the computational intensity makes the analysis less than transparent to many interested parties—e.g., the people at large, legislators, districting commissioners, less quantitatively inclined social scientists, and courts. What is more, the choice of assumptions used as input and the hypothetical nature of the seat projections as output create uncertainty. In *LULAC*, Justice Kennedy commented favorably on the Grofman-King approach but cautioned that courts are "wary of adopting a constitutional standard that invalidates a map based on unfair results that would occur in a hypothetical state of affairs" (*LULAC v. Perry* 2006, 420).

A vote-denominated calculation of bias is transparent. It focuses on two observable numerical facts and subtracts one from the other as its essential computation. That is, to check on vote-denominated symmetry this simple calculation is all that is needed:[4]

$$Symmetry\ Vote\ Bias = Median\ District\%$$
$$-Mean\ District\%.$$

Both the median and mean percentages are observed facts. If they do not match, some degree of

asymmetry exists. The mean vote percentage (again, for this moment, assuming equal turnouts among districts) records the voting strength of one set of partisan voters. The median district vote percentage refers to the vote percentage it takes to win half the seats. This is the point in Figure 1 (above) where the curve crosses the 50 percent mark on seats—i.e., the horizontal line of demarcation between winning a minority versus a majority of the districts. When the median district percentage implies that it takes more than 50 percent of the vote for Party A to win half the seats, and by necessary implication it takes Party B less than 50 percent of the vote, the system is operating with a potentially harmful vote weight bias against Party A's voters. Below we describe when the potential for harm operates to produce actual harm.[5]

Gerrymandering as the cause

A vote-weight bias exposed by the median versus mean comparison is known in a literal sense to have been caused by how the district lines aggregate votes versus how voters expressed their partisan preferences when aggregated system-wide without division into districts. How is this known? When votes are counted system-wide, all votes contribute equally to the count. When the votes are counted after division into districts, nothing changes but the way in which the votes are alternatively being counted. To the extent the two forms of counting do not produce the same result, the difference has to have been caused by the placement of district lines.

An identification of cause in its literal sense may not be all that is needed, however. For courts, identification

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[4]The lineage of this simple calculation as an aspect of fair districting can be traced as far back as a late-nineteenth century analysis by Francis Edgeworth (Edgeworth 1898, 534–6). Its connection to gerrymandering can be traced at least to David Butler's analysis of electoral bias in mid-twentieth century British general elections (Butler 1951, 330). The same comparison has been used in later work to provide the same check (e.g., Butler 1952, 276, n. 1; Rydon 1957; Erikson 1972, 1237).

[5]The median-mean mismatch is a leading indicator of the potential for harm because it indicates that for a similar vote distribution located at a mean of 50 percent of the vote the median district vote percentage would be above or below 50 percent in violation of majority rule and, by virtue of that fact, would also violate the principle of equal vote weights. As explained below, the assumption of "a similar vote distribution" implies something like a uniform vote swing in each and every district, which is highly unlikely. Therefore, to check on whether the potential for harm is realized as actual harm, our proposal requires checking on the majority status of districts carried when the disadvantaged party actually wins a majority of the vote.

of the causal force also entails the intention to create a gerrymander. Packing associated with residential patterns of one set of partisans is liable to result from even randomly drawn compact, contiguous, and equipopulous districts, creating so-called "accidental gerrymanders" (Erikson 1972, 1237). In the United States, as Erikson (1972) once remarked, as members of the Supreme Court have suspected (see *Vieth v. Jubelirer* 2004, 289–90), and as Chen and Rodden (2013) have demonstrated for 20 states, Republicans usually hold a natural symmetry bias advantage. Republicans naturally benefit from their relatively more efficient residential distribution because large segments of Democratic voters reside in densely packed urban areas. Therefore, in order to distinguish unintentional from intentional gerrymanders, a benchmark of what naturally would result from any neutral line drawing has to be established. This can be achieved by comparing the median-mean vote percentage difference in actual districts to a reasonably large set of neutrally drawn districting plans.

Knowing the cause of bias, whether as a literal or intentional matter, is one step short of saying with assurance that the bias caused harm. For instance, in a three district situation Party A's votes are distributed in, say, a 47, 53, 65 arrangement. The median is 53 and the mean is 55; thus, the bias runs two points against Party A (i.e., $53 - 55 = -2$). Still, Party A wins two of three seats just as it does in a symmetric distribution such as 45, 55, 65. The 47, 53, 65 arrangement signals the potential for harm, inasmuch as the line placements create a vote weighting that could work against Party A, but with no directly observable harm in the instant case of the example. That is, we have no knowledge that harm has been done and no sure knowledge that harm will be done unless and until it can be shown that the district arrangements cause the potentially disadvantaged partisans to fail to win a majority of districts when they cast a majority of votes. In fewer words, a median versus mean percentage difference is a leading indicator of potential for harm; when that difference operates to violate majority rule we know we are looking at a situation that caused actual harm.

TESTS FOR FINDINGS OF FACT AND LEGAL SIGNIFICANCE

The preceding discussion offers a framework in principle. That is not enough, when, as here and until now, the discussion is abstract and formulaic.[6] Application of the proposed diagnostic requires context, specificity, and nuance.

We start with our two core premises. The median-mean comparison is the leading indicator of potential unfairness. The actual finding of fact that a harmful gerrymander exists rests on whether a districting plan tilts the playing field so decidedly in favor of one set of partisans that their diluted vote weights attributable to gerrymandering prevent them from winning a majority in contradiction of their majority vote status. In combination, and with a qualification to take account of bias due to partisan turnout differentials rather than gerrymandering, a gerrymander exists as a factual matter when three conditions hold.

(1) The mean vote percentage for one set of partisan voters is consistently higher than its median.

(2) A party's majority status among voters is determined by its statewide two-party percentage and not its district mean percentage.

(3) A party's vote percentage is greater than 50 and its voters do not carry a majority of the districts in most instances.

A finding of fact by itself is not enough to say the harm caused is beyond constitutionally permissible limits requiring judicial intervention and remedy. Social scientists, legislatures, and districting commissions looking to identify a gerrymander are fact finders. A court asked to adjudicate an allegation of gerrymandering is both a finder of fact and an institution receiving a request to police a political process from which it stands apart and which deserves respect on its own terms. It is not surprising, then, that loud calls from social scientists and reformers for court action have received slow, cautious, and halting responses. In the eyes of some social scientists and reformers, a patient is suffering an ill that can be diagnosed and treated. In the eyes of a court, intervention might have its own adverse side effect and, in the long run, a patient might recover of its own accord.

In order to accommodate the distinction between gerrymandering as a matter of fact versus a matter

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[6]In Justice Stewart's words, "apportionment of a legislative body of a sovereign State … is far too subtle and complicated a business to be resolved as a matter of constitutional law in terms of sixth-grade arithmetic" (*Lucas Avery v. Midland County Texas* 1968, 510, Justice Stewart dissenting).

of judicially enforceable law, the third prong has to be adjusted to take account of the persistence of a gerrymandering effect and a fourth prong has to be added to check on whether the persistence indicates the analytical trappings of intentional gerrymandering. To do so first requires, barring special circumstances, that the gerrymandering always relegates the disadvantaged voters to minority status when they actually constitute a majority. For a legal finding, therefore, the adjusted third prong reads as follows.

(3′) A party's mean vote percentage is greater than 50 and its voters do not carry a majority of the districts in *any* instance.

The fourth prong checks on whether it is plausible to think a voting majority's relegation to minority status is intentional.

(4) A party's median versus mean is larger or smaller than reasonably could be expected from neutral line drawing.

The fact of a gerrymander is evident when the electoral playing field is tilted against one set of voters so that they cannot achieve majority status with anything close to the same efficiency as the opposing set of voters. The illegality of a gerrymander also requires the evidence to show that legislative majority status is persistently and intentionally foreclosed to one set of partisans despite their sometime majority status among voters.

Prong 1: Consistency of median-mean difference

The first prong requires a systematic potential for voters of one party to have their votes diluted. If the tendency is not systematic, the problem is not sufficiently structural to conclude that gerrymandering is the cause of differential vote weights.

An important caveat holds that unusually large vote margins for a jurisdiction-wide election—e.g., where one party's candidate wins more than, say, 60 percent of the vote—is unlikely to supply useful information about the vote distribution in competitive circumstances. This is another way of saying we have to be wary of what noncompetitive outcomes can tell us about truly competitive situations.

Prong 2: Checking for turnout bias

The second condition recognizes that an alternative source of contra-majoritarian election results

could be turnout bias. This form of bias enters when one party wins districts with relatively small turnouts. Turnout bias is easily detected by comparing the mean district percentage to the statewide percentage. The mean weights each district equally in its calculation while the statewide percentage weights each voter equally.[7] This tells us that the determination of the majority party among voters has to be identified by a statewide two-party percentage and not by a district mean percentage. Otherwise, a party's seemingly majority standing could be granted on the basis of this second source of electoral bias. For example, as shown in the Florida application below, Republicans in the name of George W. Bush won the official Florida presidential vote count in 2000, but aggregating his votes by districts and calculating a mean shows that Democrats in the name of Al Gore won a mean district percentage of 50.94. Calculating a mean percentage across districts makes it look as if Democrats were the majority party among voters. They were not, as the statewide calculation shows. The second prong requires taking this fact on board before evaluating a gerrymandering allegation.[8]

Prong 3 and 3′: Finding of fact and legal significance

The third condition says, with respect to a finding of fact, that the diagnostic detects observable harm only if a party has shown the ability to win a vote majority. If it cannot win a majority, we have no well-founded basis for inferring what would happen if it did. It also says that the contra-majoritarian bias runs only in one direction as the result of a

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[7]The use of this comparison to detect turnout bias has a long scholarly lineage (Edgeworth 1898, 536–37; Butler 1947, 287; Erikson 1972, 1236; Gudgin and Taylor 1979, 55–9; Grofman et al. 1997, 461–64).

[8]It is important to note that the analysis of election to statewide office aggregated by district holds more probative value than district-specific races as such. This is because gerrymandering via packing often has the byproduct of discouraging turnout in packed districts. In the extreme, packing a district with one set of partisans and then allowing the district to go uncontested can strongly skew the turnout differential in one partisan direction while skewing the asymmetry effect in the other direction. The countervailing tendencies are largely absent for offices contested statewide (president, governor, attorney general, and the like). Statewide elected offices are not subject to the same within-district turnout incentives as the district-specific races and thus provide a cleaner and clearer reading of a gerrymander effect.

gerrymander. If it runs in both directions, the districting plan is not a gerrymander but, possibly, an equal opportunity degrader of partisan voting strength or, more likely, a plan operating in a jurisdiction with a good deal of partisan fluidity. Finally, it says partisans have to be harmed more often than not; otherwise, the plan's effects cannot be said to be structural.

Contra-majoritarian results are enough to satisfy prong 3 as a factual matter. A legal determination requires more. The Supreme Court entered the metaphorical political thicket in the 1960s on the question of malapportionment with one eye on the idea of fair and effective representation, a foundational idea to the democratic process, and another eye on possible remedies available through the democratic process itself. Because many states had made little or no effort to create equipopulous districts for decades prior to the 1960s (see Hacker 1964, 23, citing David and Eisenberg 1961; Boyd 1962), a solution to malapportionment via democratic political processes appeared implausible. Any such hope was run aground by the entrenchment of rural popular minorities steadfastly holding onto majority legislative control—"the ins are choking off the channels of political change to ensure that they will stay in and the outs will stay out" (Ely 1980, 103). The principled problem was unfair and ineffective districts; the practical problem was that popular majorities had no political means to correct the offense.

Judicial responses to partisan gerrymandering share this dual concern. Importantly, it has to be recognized, indeed emphasized, that courts have especially good reason to be cautious when the issue is a packing form of gerrymandering. Recognizing the connection between packing gerrymanders and caution goes a long way toward explaining why courts have had such a difficult time applying the *Bandemer* standard (*Davis v. Bandemer* 1986). That is, the *Bandemer* standard could work well when applied to exclusively cracking forms of gerrymandering[9] but not so well, apparently not at all, in application to packing gerrymanders.

Packing gerrymanders create this dilemma. For a packing gerrymander to rise to the level of an ascertainable constitutional offense a jurisdiction has to be politically competitive.[10] Both parties have to be capable of winning a vote majority.[11] But, if both parties are capable of winning a vote majority, then it is plausible to think the political process can supply a corrective. So, for instance, in a competitive juris-

diction with, say, a 52–48 partisan split, one might reasonably wonder whether the political dynamics in the course of a ten-year redistricting cycle could turn the packed partisans into a legislative majority. And, even if those dynamics are unlikely to occur in gerrymandered legislative elections themselves, one might judge that the disadvantaged partisans have reasonable expectations of electing a governor who can protect their interests.

This line of reasoning with respect to competitive jurisdictions, consistent as it is with the proposition that "unconstitutional discrimination occurs only when the electoral system is arranged in a manner that will consistently degrade a voter's or group of voters' influence on the political process as a whole" (*Davis v. Bandemer* 1986, 132), reveals why *Bandemer's* justiciability holding appears to have been hoist with its own petard. It is a manageable standard for exclusively cracking forms of gerrymandering but all but meaningless in application to packing gerrymanders inasmuch as the burden of proof is unlikely ever to be met in a competitive jurisdiction.[12]

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[9]If a gerrymander is of the exclusively cracking form, with the majority party setting all districts at, say, 55 percent of the baseline vote, a court might be willing to apply the three-prong test the Supreme Court set out for racial vote dilution cases (*Thornburg v. Gingles* 1986). The three prongs would include a showing of partisan polarized voting, a partisan minority large enough and sufficiently residentially concentrated to form a majority in one or more single-member districts, and majority party bloc voting that usually defeats the minority partisans' candidate of choice. A jurisdiction that meets the three preconditions could be judged to be silencing minority partisan voices, and, with that, the democratic process would be ill-equipped to operate as a corrective.

[10]Grofman and King make the same point: "… we are not proposing to apply this methodology [re: a symmetry standard focused on seat fairness] in every situation, but only in *potentially* competitive situations, where the consequences of gerrymandering might be especially onerous in thwarting the will of the majority … " (Grofman and King 2007, 19, emphasis in original).

[11]If that is not so, then a court would face the difficulty of setting down a rule for fairness that requires it to enter the realm of political theorist and engineer (see fn. 2).

[12]That the *Bandemer* standard applies to exclusively cracking gerrymanders is how the district court in *Martinez* read it (*Martinez v. Bush* 2002). The court evaluated the allegations of partisan gerrymandering in the post-2000 round of Florida's redistricting by applying the three-prong *Gingles* test in association with the totality of circumstances in regard to partisanship. We are led to think that it is little wonder that *Bandemer* elicits frustration, when, as we have said and so far as we can tell, all of the contemporary allegations of partisan gerrymandering of congressional districts that have come before the courts involved allegations of packing.

Without presuming to know whether the frustrations over the *Bandemer* standard plus worries about the corrosiveness of packing gerrymanders might ever result in a reaffirmation of justiciability, the proposed diagnostic can be applied after adding consideration of whether it is plausible to think that the political process would supply a corrective within the framework of the districts as such.[13]

Prong 4: Intentional bias

The Supreme Court has made clear that intentional discrimination is a necessary element for finding unconstitutional vote dilution through choices over electoral systems or districts (see, e.g., on racial vote dilution in *City of Mobile v. Bolden* [1980]; on malapportionment in *Karcher v. Daggett* [1983]; and on partisan gerrymandering in *Davis v. Bandemer* [1986]). As the *Bandemer* court wrote, "[a]s 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" (*Davis v. Bandemer* 1986, 129). While true on one level, it is doubtful that the check could be a simple look and see, one and done exercise.

One possibility is to think that only an unavoidable median-mean difference is acceptable, because, if it can be shown that a smaller median-mean difference is possible, then at the time the district plan is drawn, "the political impact … would be known and, if not changed, intended" (*Gaffney v. Cummings* 1973, 753). This is consistent with the standard applied to malapportionment claims, most especially since *Karcher v. Daggett* (1983). It cannot extend to gerrymandering in any easily manageable way, however. Unlike the official population counts used to evaluate malapportionment, median-mean comparisons have no single metric. Any and all of numerous election results (e.g., governor, president, public service commissioner, other jurisdiction-wide offices, or results within districts) could be used for comparison. Each is likely to produce a different result when a median is compared to a mean.

Complicating matters further is that the facts, as we know them generally, reveal Republicans usually hold a natural asymmetry advantage (Chen and Rodden 2013). This moves the question of discriminatory intent to that expressed in *Feeney*, where the Court held a showing of discriminatory

purpose implies a course of action has been taken "at least in part 'because of,' not merely 'in spite of,' its adverse effects upon an identifiable group" (*Personnel Administrator of Mass. v. Feeney* 1979, 279). By this standard, a state legislature presumably may let stand a party's natural asymmetry advantage. Thus, the question as it applies to gerrymandering in the context of a particular state becomes this: What, if any, natural advantage does one party hold in the state?

Prong 4 answers by evaluating a plan against a set of alternative plans that have been produced using neutral criteria. The form we propose is through algorithms used to generate compact, contiguous, and equipopulous districts drawn without conscious partisan considerations (e.g., Engstrom and Wildgen 1977; Cirincione, Darling, and O'Rouke 2000; Chen and Rodden 2013). When the median-mean difference of a chosen plan lies outside the plausible bounds of expectations using neutral procedures, a prima facie conclusion of intent has been shown to reach into the realm of not wanting to count votes fairly.[14]

Briefly summarized, unfair partisan gerrymandering first requires checking two readily observable facts: (1) whether the mean district vote percentage for one party is consistently higher than its median district percentage, and (2) which party won a vote majority as determined by its system-wide two-party percentage (i.e., not its district mean percentage). To conclude that a district plan is a structural gerrymander in fact, violations of majority rule must occur more often than not when the disadvantaged partisans cast a vote majority, barring special circumstances. To reach legal significance the bar is higher, on two counts. Violations of majority rule must always occur (barring special circumstances) when the

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[13]By adding the qualifier of "within the framework of the districts as such," the decision rule refuses to allow something like a 50:50 chance of electing a governor from the disadvantaged party to be enough to permit unequal vote weights. It also rejects the presumption that, even if the disadvantaged party's gubernatorial candidate is elected, unequal voting rights would not be traded via logrolling for something else.

[14]Nothing we are saying forecloses an attempt to reduce a median-mean difference to zero. A legislature or districting commission has license to use a de minimis median-mean difference as its standard, for, as the Supreme Court held in *Gaffney*, "judicial interest should be at its lowest ebb when a State purports fairly to allocate political power to the parties in accordance with their voting strength and, within quite tolerable limits, succeeds in doing so" (*Gaffney v. Cummings* 1973, 754).

disadvantaged party receives a majority of votes. This signals that the adverse effects of the district lines are unlikely to be remedied through the usual political process. Plus, to evaluate the intent to gerrymander, as adduced analytically, the median-mean value of bias in a districting plan must outstrip what could reasonably be expected to result when compared against the levels of bias in a set of neutrally drawn maps.

APPLICATIONS: SIX GERRYMANDERING ALLEGATIONS

Three much discussed allegations of gerrymandering in recent decades are the Phillip Burton districting plan for California in the 1980s, the post-2000 Pennsylvania plan that led to the Supreme Court's decision in *Vieth v. Jubelirer* (2004), and the 2004 Texas plan that led to the Supreme Court's decision in *LULAC v. Perry* (2006). It comes as a surprise, we suppose, that these three of our six cases are the ones where the findings of fact do not support the allegations. Three other cases, all of which do support the factual allegations, were identified by David Mayhew as deft gerrymanders during the post-2000 round of redistricting: viz., Florida, Michigan, and Ohio (Mayhew 2011, 24; see also Toobin 2003).[15]

All six accusations speak to a packing form of gerrymandering inasmuch as each state created at least a few districts that would likely serve as safe-wins for the disadvantaged party.[16] Consistent with the gerrymandering charges in all six states, the median-mean comparisons indicate the plans persistently held the potential to favor one set of partisans at the expense of the other. The evidence needed to apply the three-pronged standard for evaluation is presented in Table 1. Column 1 identifies the states and lists the two or three presidential elections and the four or five House elections for which we have evidence. Columns 2 and 3 report the number and percentage of districts won by Democrats. Columns 4–6 report the statewide, median, and mean percentages. Column 7 records median-mean comparisons, with results for "median% minus mean%" (positive values indicate an asymmetry bias favoring Democrats; negative values indicate an asymmetry bias favoring Republicans). For clarity, the disadvantaged party is listed in column 8. Column 9 reports the assessments of whether the outcome contravenes the majority rule principle. A "Yes" entry indicates the particular

election is contra-majoritarian; disadvantaged partisans cast a vote majority but failed to carry a majority of the districts. An " $\sim \sim \sim$ " entry means the election cannot tell us much about gerrymandering in the particular election but is an important control condition indicating that the favored party won a majority of districts with a mean vote percentage over 50—noting, it always does. A "No" entry is especially revealing; it contravenes a gerrymander accusation because the disadvantaged party did not suffer harm inasmuch as it won a majority of seats with a majority of the vote. Column 10 takes the final step and reports whether the contravention of majority rule is specifically attributable to a gerrymander effect.

A brief summary of our results helps set the stage before discussion of each in detail.

- California in the 1980s is not a partisan gerrymander because the observed outcomes do not usually contravene the majority rule principle.

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[15]As a check on whether less prominently discussed congressional gerrymanders need the kind of scrutiny applied to our six cases, we applied prong 1 of our diagnostic to all 39 states that have three or more congressional districts—packing gerrymanders are not possible in states with one or two seats. Ten states show median-mean differences consistently favoring one party in all 2002 to 2010 elections (a few others may need extra scrutiny to consider special circumstances arising from uncontested House elections). Two states' congressional plans favored Democrats over Republicans (California and Kansas); eight plans favored Republicans over Democrats (Florida, Illinois, Michigan, Missouri, Ohio, Pennsylvania, South Carolina, and Texas). The four cases we are not subjecting to detailed scrutiny (California, Illinois, Kansas, and South Carolina) are ripe for further scrutiny, although Kansas is a most unlikely candidate given its decidedly Republican leanings.

[16]Checking on whether the issue is a packing gerrymander is one precondition for applying our standard. Another is a check on the partisan stability versus fluidity of voting patterns (see, e.g., Rush 1992; 2000). As the application to California below makes clear, the standard carries its own implicit check on partisan fluidity. While space here does not allow a full-scale presentation of the explicit checks we performed, we did check on how well presidential votes in the 1980s and 2000s (our state-wide elections) line up against a set of measurements of congressional district "normal votes," the quintessential baseline partisan division within districts (Levendusky, Pope, and Jackman 2008). The bivariate correlations are .98 or .99, functionally reliability coefficients for the alternative measurements, and all relationships show strikingly similar linear forms. In all six states, therefore, presidential votes reveal themselves as excellent proxies, valid measurements, for the district partisan voter dispositions.

TABLE 1. DISTRICT DEMOCRATIC TWO-PARTY PERCENTAGE COMPARISONS TO DETECT HARM TO PARTISANS

(1) State and election	Districts		Votes			Gerrymander indicators			
	(2) Dem number won	(3) Dem percent won	(4) Dem statewide%	(5) Dem median%	(6) Dem mean%	(7) Median vs. mean difference	(8) Disfavored partisans	(9) Contra-majority outcome?	(10) Gerrymander effect
California									
Pres '84	8 of 45	17.8	41.78	43.20	42.80	+0.40	Rep	No	No
Pres '88	22 of 45	48.9	48.19	49.85	49.71	+0.14	Rep	No	No
Cong '84	27 of 45	60.0	49.45	60.33	51.55	+8.78	Rep	Yes	Maybe
Cong '86	27 of 45	60.0	52.94	65.01	55.19	+9.82	Rep	~ ~ ~[a]	~ ~ ~[a]
vCong '88	27 of 45	60.0	54.22	65.70	57.42	+8.28	Rep	~ ~ ~[a]	~ ~ ~[a]
Cong '90	26 of 45	57.8	51.60	58.43	53.61	+4.82	Rep	~ ~ ~[a]	~ ~ ~[a]
Florida									
Pres '00	8 of 25	32.0	49.995	46.26	50.94	−4.68	Dem	~ ~ ~[a]	~ ~ ~[a]
Pres '04	7 of 25	28.0	47.49	44.76	48.79	−4.03	Dem	~ ~ ~[a]	~ ~ ~[a]
Pres '08	10 of 25	40.0	51.42	49.08	53.01	−3.93	Dem	Yes	Yes
Cong '02	7 of 25	28.0	41.56	36.84	40.49	−3.65	Dem	~ ~ ~[a]	~ ~ ~[a]
Cong '04	7 of 25	28.0	39.99	35.11	41.81	−6.70	Dem	~ ~ ~[a]	~ ~ ~[a]
Cong '06	9 of 25	36.0	42.30	43.72	54.69	−10.97	Dem	~ ~ ~[a]	~ ~ ~[a]
Cong '08	10 of 25	40.0	47.53	42.54	53.43	−10.89	Dem	~ ~ ~[a]	~ ~ ~[a]
Cong '10	6 of 25	24.0	38.16	35.27	38.96	−3.69	Dem	~ ~ ~[a]	~ ~ ~[a]
Michigan									
Pres '00	5 of 15	33.3	52.64	47.93	53.47	−5.54	Dem	Yes	Yes
Pres '04	5 of 15	33.3	51.72	46.65	52.82	−6.17	Dem	Yes	Yes
Pres '08	12 of 15	80.0	58.37	54.66	59.41	−4.75	Dem	No	No
Cong '02	6 of 15	40.0	50.55	40.70	53.47	−12.77	Dem	Yes	Yes
Cong '04	6 of 15	40.0	49.49	40.35	50.87	−10.52	Dem	~ ~ ~[a]	~ ~ ~[a]
Cong '06	6 of 15	40.0	54.21	47.26	57.58	−10.22	Dem	Yes	Yes
Cong '08	8 of 15	53.3	54.34	51.21	56.18	−4.97	Dem	No	No
Cong '10	6 of 15	40.0	45.85	44.03	47.87	−3.84	Dem	~ ~ ~[a]	~ ~ ~[a]
Ohio									
Pres '00	5 of 18	27.8	47.89	46.03	48.34	−2.31	Dem	~ ~ ~[a]	~ ~ ~[a]
Pres '04	5 of 18	27.8	48.94	48.18	49.09	−0.91	Dem	~ ~ ~[a]	~ ~ ~[a]
Pres '08	8 of 18	44.4	52.33	49.27	52.51	−3.24	Dem	Yes	Yes
Cong '02	6 of 18	33.3	42.86	34.31	42.48	−8.17	Dem	~ ~ ~[a]	~ ~ ~[a]
Cong '04	6 of 18	33.3	48.69	39.01	50.33	−11.32	Dem	~ ~ ~[a]	~ ~ ~[a]
Cong '06	7 of 18	38.9	52.67	48.61	53.39	−5.23	Dem	Yes	Yes
Cong '08	10 of 18	55.6	52.49	51.46	53.09	−1.63	Dem	No	No
Cong '10	5 of 18	27.8	43.97	43.09	44.75	−1.66	Dem	~ ~ ~[a]	~ ~ ~[a]
Pennsylvania									
Pres '00	10 of 19	52.6	52.16	50.22	52.19	−1.97	Dem	No	No
Pres '04	10 of 19	52.6	51.26	50.12	51.28	−1.16	Dem	No	No
Pres '08	9 of 19	47.4	55.23	49.997	55.08	−5.08	Dem	Yes	Yes
Cong '02	7 of 19	36.8	42.04	39.86	40.81	−0.95	Dem	~ ~ ~[a]	~ ~ ~[a]
Cong '04	7 of 19	36.8	49.14	40.70	49.73	−9.03	Dem	~ ~ ~[a]	~ ~ ~[a]
Cong '06	11 of 19	57.9	56.27	51.93	57.97	−6.04	Dem	No	No
Cong '08	12 of 19	63.2	56.01	55.86	56.64	−0.78	Dem	No	No
Cong '10	7 of 19	36.8	48.06	44.82	49.05	−4.23	Dem	~ ~ ~[a]	~ ~ ~[a]
Texas									
Pres '00	7 of 32	21.9	39.24	34.77	40.79	−6.02	Dem	~ ~ ~[a]	~ ~ ~[a]
Pres '04	7 of 32	21.9	38.49	35.50	40.45	−4.95	Dem	~ ~ ~[a]	~ ~ ~[a]
Pres '08	11 of 32	34.4	44.06	41.77	46.09	−4.32	Dem	~ ~ ~[a]	~ ~ ~[a]
Cong '04	11 of 32	34.4	40.35	37.30	43.82	−6.52	Dem	~ ~ ~[a]	~ ~ ~[a]
Cong '06	13 of 32	40.6	45.92	39.85	51.31	−11.46	Dem	~ ~ ~[a]	~ ~ ~[a]
Cong '08	12 of 32	37.5	41.48	41.90	43.52	−1.62	Dem	~ ~ ~[a]	~ ~ ~[a]
Cong '10	9 of 32	28.1	32.17	31.75	34.38	−2.63	Dem	~ ~ ~[a]	~ ~ ~[a]

Percentage entries are major two-party percentages. House vote data were collected from *America Votes* (Scammon and McGillvray 1991; Cook and McGillvray 2011) and checked against the online posting of official returns (Office of the Clerk, U.S. House of Representatives). Three discrepancies were resolved in favor of the Clerk data (OH6, 2004; PA3, 2008; TX27, 2010). One discrepancy (TX22, 2006) was resolved in favor of *America Votes* in order to count an official write-in candidate but truly a Republican candidate as receiving Republican votes. Presidential vote data are from Barone et al. (various dates).

[a]The advantaged party won a seat majority when it won a vote majority.

- Florida is a partisan gerrymander in fact and crosses the proposed legal threshold; the disadvantaged Democrats did not win a majority of seats with a vote majority while Republicans always do.
- Michigan and Ohio are partisan gerrymanders as matters of fact but not law; disadvantaged Democrats usually but not always win less than a majority of seats when they have a vote majority.
- Pennsylvania is not a partisan gerrymander; in four of the five elections when the disadvantaged Democrats won a majority of the vote they also carried a majority of the districts.
- Texas is not a partisan gerrymander as a factual matter. This conclusion rests on the simple fact that from 2002 to 2010 Texas election results show no realistic possibility that Democrats could win a statewide vote majority.

California

In their day, California's 1980 congressional districts were portrayed as an archetypal gerrymander. Following the 1980 Census, the California congressional delegation increased in number from 43 to 45. With Assembly and Senate Democratic majorities in control of the process, along with foreknowledge that Democratic Governor Edmund G. (Jerry) Brown would likely support their determinations, the state set about redrawing district lines. Amongst intrigue, because Assembly Democrats were split over downstate versus upstate Speaker candidates and because the compromise candidate (Willie Brown) was elected with the votes of 28 Republicans, a bipartisan line-drawing enterprise looked possible. It was not to be. The congressional district plan, drawn under the direction of U.S. House member Phillip Burton (D-CA), passed on a party-line vote and was widely viewed as decidedly unfair to Republicans.[17]

Republicans were able to put a measure on the June 1982 primary ballot asking voters to approve or disapprove the plan. Voters disapproved, which had the effect, after the State Supreme Court ruled on the practicalities, that the plan could be used for the upcoming November 1982 elections but not thereafter (*Assembly v. Deukmejian* 1982). The 1982 election proved favorable to California's U.S. House Democrats; they won 28 of the 45 districts, 62 percent, with 51 percent of the two-party vote.

Despite the 1982 outcome, Republicans had reason for optimism. Republican George Deukmejian won the 1982 gubernatorial election, and thus he might be able to negotiate an evenhanded set of districts when the lines were redrawn in the next legislative session, or so the Republicans thought. Democrats decided not to wait. Out-going Governor Brown called the lame-duck legislature into a December extraordinary session. The legislature passed a new Phil Burton plan and Brown signed it shortly before leaving office on January 2, 1983. Republicans sued to block the new plan on state law and federal constitutional grounds. After years of motions to and proceedings before state and federal counts, in September 1985, a three-judge federal panel ordered a stay pending the U.S. Supreme Court's decision in *Bandemer* (*Badham v. Eu* 1985).

In the meantime, California's 1984 congressional elections saw Democrats win 27 of 45 seats (60 percent) with just 49 percent of the two-party statewide congressional vote and with a median-mean comparison 8.78 points in favor of Democrats. Two years later, in 1986, Democrats again won 27 of the 45 seats (60 percent), but this time with 53 percent of the vote and with a median-mean comparison tilting 9.82 points in their favor. Despite the strong bias, the district court ruled in April 1988 that the districts did not meet the standard articulated in *Bandemer* because Republicans were not being shut out of California's political process—40 percent of California's congressional delegation, one of its two U.S. Senators, and the sitting president (a former governor of the state) were Republicans (*Badham v. Eu* 1988).

An analysis using the standard proposed here reaches the same conclusion as the district court: the California congressional districts were not a partisan gerrymander. We start with the fact that Republican congressional candidates won a statewide vote majority in 1984 and, despite that majority, carried only 40 percent of the districts. This is a clear violation of majoritarianism, but it is not so clear that gerrymandering is the cause. An alternative explanation is that the contravention was caused by turnout bias favoring Democrats. This possibility arises

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[17]See Cain (1984, 81–103) for a description of the 1982 political process that produced California's first districting plan for the 1980s.

from the facts showing Democrats won an average vote percentage greater than 50 but not a jurisdiction-wide vote majority. The most we can say, therefore, is that on the evidence here California's 1984 congressional election "maybe" was a gerrymander. What is more important in this California case is that, even if the 1984 congressional election outcome is deemed a gerrymander, in two presidential elections the Republican candidate won a majority of the districts with a majority of the votes. Therefore, in the six elections for which we have information, a contra-majoritarian outcome occurs once but a proper majoritarian outcome for the disfavored Republicans occurs twice. In short, the case for a California gerrymander in the 1980s fails to satisfy prong 3.

What is to be said of the chicanery that preceded implementation of the lines? There is little doubt (none expressed here) that Phillip Burton and his allies rigged the system. Nevertheless, the evidence indicates they did so through careful placement of lines to protect Democratic incumbents and by leaving to the winds of political fortune the plight of Republican incumbents. A revealing piece of evidence in this regard is that in 1984 President Reagan carried 20 districts with between 50.1 and 60 percent of the district votes. Remarkably, Democratic House candidates won in 19 of those 20 districts. In all 19 districts the winner was a Democratic incumbent (the one Republican winner was by a Republican incumbent). Rather clearly, a large number of Republican voters at the presidential level turned and chose to support incumbent Democratic candidates in congressional elections (see also, Cain 1985). Knowing how to arrange district lines to protect incumbents by relying on voters' proclivities to support them over and against their could-be otherwise proclivity to choose on the basis of party was apparently worth much, but the strategy and actions do not amount to a partisan gerrymander. It was not the line placements as such that caused strong electoral headwinds for Republican congressional candidates. Rather, it was the way the lines interacted with voters' choices when incumbents were on the ballot.

Florida

Strong population growth through the 1990s brought Florida two additional congressional seats following the 2000 census, increasing its number to 25.[18] The state invited public input through public redistricting meetings on several occasions, August into October 2001, and in various locales throughout the state. In the end, the public discussions amounted to more talk than input. The plans drawn by Republican controlled legislative committees were approved by Republican majorities in both chambers, with no Democrat voting yea. In March 2002, Republican Governor John E. (Jeb) Bush signed the bill into law and, with others, submitted the plan to the U.S. Department of Justice for pre-clearance as required by Section 5 of the Voting Rights Act. In June 2002, the Department pre-cleared the congressional plan. A variety of interested parties joined forces and filed suit in federal court seeking declaratory and injunctive relief, alleging in part that the congressional plan constituted an unconstitutional partisan gerrymander. No relief was granted prior to the November elections, and in December 2002, the district court ruled that under the *Bandemer* standard, as viewed through the analytical prism set out in *Gingles* for racial vote dilution claims, plaintiffs failed to show that Florida Democrats would suffer "discriminatory effects that are serious enough to warrant federal court intervention" (*Matinez v. Bush* 2002, 1280).

Analyzed through the analytical prism proposed here, we reach a different conclusion: Florida's 2002–2010 congressional districts are a prima facie case of partisan gerrymandering in fact and in law. The districts were consistently biased against Democrats, as indicated by the consistent median versus mean difference running against Democrats (Table 1, column 7). In the 2008 presidential election Democrats won a mean vote majority but carried only 10 of the 25 districts.

The fact of this Florida gerrymander crosses the threshold for legal significance under prongs 3' and 4 set out above. Democrats could not carry a majority of districts even in the one case when they received a majority of the two-party votes. Thus, the test set out by prong 3' is met. Prong 4 requires a showing of intentional packing of Democrats to a degree that goes beyond what reasonably could be attributed to residential patterns. Chen and Rodden (2013) have produced 50 neutrally drawn compact, contiguous, and

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[18]Statements about the facts involved in Florida's redistricting rely on the district court's preliminary findings of fact in *Martinez v. Bush* (2002, 1286–97).

equipopulous congressional districting plans for Florida. Their analysis relies on the Bush-Gore 2000 presidential vote percentages re-aggregated by district. The average median-mean difference among their 50 neutral plans is −1.22, with a maximum value of −2.76. The −4.68 median minus mean comparison (Table 1, 2000 presidential election) of the state's plan exceeds all 50 median-mean comparisons for the neutrally drawn districts. Therefore, the median-mean difference of the districts adopted by the state goes far beyond a difference attributable to natural partisan residential patterns.

In sum, the Florida districts adopted in 2002 were biased against Democrats; the bias persisted and violated the majority rule principle; and the gerrymandering bias appears to have been intended to operate this way inasmuch as no neutral plan appears capable of producing the extreme skew observable in the state's plan. Florida's congressional district plan passes the test for partisan gerrymandering (fails the test for partisan fairness), and thus our proposed standard would indict the plan as an unconstitutional partisan gerrymander.[19]

Michigan

Following the 2000 Census, the size of Michigan's congressional delegation declined from 16 to 15. Republican majorities in the State House and Senate, on a virtual party-line vote, passed a congressional redistricting plan in August 2001. Republican Governor John Engler signed it into law in September. Democrats challenged the districts in federal court alleging the plan was an unconstitutional partisan gerrymander (*O'Lear v. Miller* 2002).[20] The district court found evidence of an intention to gerrymander and an effect that would likely hamstring Michigan Democrats, but it found no allegation in plaintiffs' pleadings and no clear evidence in the record that Democrats would be unable to overcome their infirmed position in subsequent congressional elections or through other political means, such as the election of a Democratic Governor (*O'Lear v. Miller* 2002, 856–7).

Our analysis of Michigan's plan reaches the same conclusion. It is a case of gerrymandering in fact, but the fact does not cross the legal threshold for unconstitutionality. Asymmetry bias consistently disadvantages Democrats (Table 1, column 7). In four of six elections when Democrats won a vote majority, they failed to win a majority of the dis-

tricts. This occurred in the 2000 and 2004 presidential elections, aggregated by districts, and in the 2002 and 2006 congressional elections. This combination of findings tells us that the Michigan districts usually operated to harm Democratic voters by diluting their votes. The congressional districts were drawn with the intent to gerrymander (an uncontested fact—see, *O'Lear v. Miller* 2002, 855), and from 2002 through 2006 they had the effect of under-valuing Democratic votes.[21] Nevertheless, toward the end of the decade—in both the 2008 presidential and House elections—Democrats won a majority of districts with a mean vote percent above 50. This full range of evidence makes it plausible to think that the political process could undo the gerrymander in due course, leaving us to conclude that the political process at the district level could overcome Democrats' disadvantage. Therefore, the Michigan congressional districts are a gerrymander because they more often than not consign Democratic voting majorities to carrying only a minority of districts, but the consignments are not so persistent as to make them unconstitutional.

Ohio

Ohio is the only one of our six cases that did not lead to federal court proceedings to settle partisan gerrymandering allegations. That is not because Ohio's 2002 plan was actually fair—as we show, it was a gerrymander. It is because Democrats agreed to accept the fact of the gerrymander so long as it gave Democratic incumbents at least some of what they wanted.

The Ohio delegation was reduced by one, to 18, following the 2000 Census. Congressional district lines needed to be agreed by mid-February 2002, to meet the state's filing deadline for May primaries. As December passed to January, the Republican controlled legislature and governor had yet to propose a plan. Failure to meet the deadline would

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[19]Without a more searching probe of all possible rebuttal arguments, we cannot go so far as to say that the State's plan ought to be convicted. But, on the evidence here, it is strongly suspect.
[20]The plan was also challenged in state court on procedural grounds, claiming that technical changes in the plan after legislative passage but before the governor signed it violated the Michigan Constitution. The court found the technical changes were permissible (*LeRoux v. Secretary of State*, 2002).
[21]We do not as yet have a large set of randomly drawn Michigan (or Ohio) district plans that would allow us to examine whether they would have passed the prong 4 intention test.

mean that the congressional primaries scheduled for May would have to be postponed until summer. The uncertainty created was discomforting to almost every serious congressional candidate, and the multi-million dollar price tag on a summer primary discomfited all state officials. There were also second- and third-order effects. Passing a law in January meant, under Ohio constitutional provisions, the law could take effect immediately only with two-thirds concurrence of the legislature (Barone 2005 [2006 *Almanac*], 1302). What's more, without foreknowledge of their district lines and facing the possibility that Republicans would change their district boundaries in devilish ways, Sherrod Brown and Tom Sawyer, two Democratic incumbent U.S. House members, threatened to abandon reelection bids and instead challenge, respectively, sitting Republican Governor Robert Taft III and sitting Republican State Treasurer Joseph Deters in the November elections (Hallett 2002; Cillizza 2002). Plus, unless otherwise protected, another Democratic incumbent, Ted Strickland, threatened to challenge Republican incumbent Bob Ney in whatever new district was drawn for Ney (Barone 2005 [2006 *Almanac*], 1301–2).

Republicans had room to maneuver. Democrats showed no concern for protecting House member Jim Traficant, who was under indictment on bribery charges and who two years earlier crossed party lines to vote for the Republican Speaker. Another Democratic incumbent, Tony Hall, was apparently willing to give up his seat if President Bush appointed him as ambassador to the Food and Agriculture Organization in Rome. A bill was announced on January 16. It was designed to protect Republican incumbents, give Republicans control of a newly fashioned district in which Hall would have run, carve up Traficant's 1990s district in ways that gave Sawyer a good opportunity (he did not capitalize on it as he lost the Democratic primary), and create districts that gave Brown and Strickland better than even chances. With this compromise (of a sort) in place and with the assistance of Democratic votes in both chambers, the bill passed the General Assembly and took effect on January 24 (Jacobsen 2011, 4). Two days later Representative Hall received his nomination.

While Democrats may have fared worse had the Republicans acted in a timely manner, the outcome was still a pro-Republican gerrymander.[22] The numbers and allied information in Table 1 show the median-mean difference disadvantaged Democrats throughout the decade. In three of four elections when Democrats won a vote majority, Democrats carried a minority of the districts. However, the fact of the gerrymander does not cross our proposed legal threshold. In 2008 Democrats were able to win a majority of seats, 10 of 18, with a vote majority of 52.49 percent. The gerrymandering fact of Ohio's 2002 enactment turned out to be not so persistently pernicious as to foreclose Democrats winning a seat majority before the decade drew to a close. Thus, the 2002–10 Ohio congressional districts constituted a gerrymander in fact but not in law.[23]

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[22]That Republicans could have constructed an even more effective gerrymander is suggested by discussion in Republican quarters about whether to adopt a new set of districts before the 2004 elections (Eilperin 2003). Those discussions ended up going nowhere, reportedly because the idea proved uninteresting to Governor Taft and state legislative leaders (Gottlieb 2003).

[23]Michigan's and Ohio's results raise the question of whether our proposed standard, so easily applied in retrospect, would be a reliable test when applied prospectively. While a retrospective analysis is undoubtedly more certain that a prospective one, prospective analyses have proven quite reliable (Grofman and King 2008, 14–16), and at least a plurality of the Supreme Court has recognized that "[p]rojected election results based on district boundaries and past voting patterns may certainly support this type of claim, even where no election has yet been held under the challenged districting" (*Davis v. Bandemer* 1986, 139, n. 17).

Taking leave of the 2002–10 years to look at the Michigan and Ohio districts in 2012 provides a good preliminary indication that projections are revealing. We know that in 2008 Obama won a majority of the two-party vote in Michigan and carried a majority of districts. The re-aggregation of those same Obama and McCain votes under the new 2012 lines show Obama would likewise have carried a majority of the districts (re-aggregations are from Barone at al. 2013 [2014 *Almanac*]). Therefore, without going any further, Michigan's 2012 lines would not satisfy a claim of legally significant gerrymandering inasmuch as Democrats show the prospect of winning a majority of districts with a vote majority.

The results of the same Obama and McCain comparison for Ohio show that the median-mean comparison under the 2012 lines is even less favorable than the already shown to be unfavorable 2002 lines. Moreover, Obama 2008 votes would have carried only 5 of 16 Ohio 2012 districts despite winning more than 52 percent of the 2008 statewide major-party vote. On this evidence, Ohio's 2012 lines are strongly suspect. Additional applications to the aggregation of votes for Ohio's statewide offices from 2006 (when Democrats fared well) and 2010 (when Republicans fared well) are needed to move beyond this preliminary reading, but moving to these other contests entails a straightforward task for either a fair-minded mapmaker or courts when asked to judge the gerrymander status and prospects on the basis of factual evidence from median-mean comparisons and majority-majority versus majority-minority projected district results.

Pennsylvania

The allegation of a partisan gerrymander in Pennsylvania's 2002 congressional districts was the first such case to reach the Supreme Court after *Bandemer*. On a 5–4 vote, the Court ruled that the plan could not be deemed a gerrymander under any knowable and workable standard (*Vieth v. Jubelirer* 2004), but in a 5–4 split along different lines the Court refused to go so far as to say that no standard would ever be developed.

Following the 2000 Census, Pennsylvania's congressional delegation was reduced by two—to 19. Republican majorities in both chambers of the General Assembly passed a redistricting bill and Republican Governor Mark Schweiker signed it in January 2002. The political intention was not disputed (*Vieth v. Pennsylvania* 2002a, 544). Pennsylvania Republicans saw an opportunity to increase their proportion within the congressional delegation, and national Republican leaders pushed them to do so, if for no other reason, to counterbalance an alleged pro-Democratic gerrymander that Georgia Democrats had already passed (Barone at al. 2008 [2008 *Almanac*], 1375–6). Democrats brought suit seeking to enjoin its implementation on grounds that the districts were both malapportioned and a partisan gerrymander. The district court proceedings unfolded in three steps: (1) dismissing the motion to enjoin with respect to the partisan gerrymandering allegation (*Vieth v. Pennsylvania* 2002a), (2) ruling, after trial, that the districts were malapportioned and would need to be redrawn (*Vieth v. Pennsylvania* 2002b), and (3) reviewing a remedial plan, passed and signed in April, finding that the malapportionment problem had been resolved and once again rejecting the gerrymandering claim (*Vieth v. Pennsylvania* 2002c). As noted, the Supreme Court affirmed the district court ruling in *Vieth v. Jubelirer* (2004).

On our evidence in Table 1 we have to agree with the courts' conclusion: the Pennsylvania congressional districts from 2002 to 2010 did not operate as a gerrymander. While all eight elections show an electoral bias against Democrats (all median-mean differences are negative), in four of the five elections when Democrats secured a vote majority, they also won a majority of the congressional delegation seats. Therefore, whatever the intention when drawing the lines and however much the playing field was tilted against Democrats, knowable harm to Democratic voters did not typically result.

Texas

Texas redistricting after the 2000 Census drew national attention when the state legislature's attempt to draw lines preceding the 2004 election was initially foiled as more than four dozen state House Democrats abandoned their responsibilities by exiting north to Oklahoma and thus depriving the legislative process of a quorum. That this occurred in 2003, not in 2001 when post-2000 districts were first drawn, suggests it was an aftereffect of what occurred in 2001. In fact, however, it was an aftereffect of what occurred more than a decade earlier, in 1991.

Back in 1991, with Democrats in control of the state legislature and governor's office, the redistricting process produced a congressional map allegedly gerrymandered strongly in favor of Democrats. Indeed, Michael Barone and his associates bestowed the 1990s' "Phil Burton Award" on Texas for its immodest intention to protect Democratic incumbents (Barone at al. 1993 [1994 *Almanac*], 1209: noting the award was named for the mapmaker behind California's districts of the 1980s, described above). When it came time to redistrict in 2001, the legislature, under split partisan control of its chambers, failed to produce a congressional map. This brought the federal courts into the process, and in November 2001, a three-judge panel drew the map to be used in the 2002 elections (*Balderas v. Texas* 2001).

The court emphasized adhering to neutral districting principles but also preserved as far as practical the districts of incumbents. The result was a 2002 election said to "leave the 1991 Democratic Party gerrymander largely in place as a 'legal' plan." (*Henderson v. Perry* 2005, 768). Representative Martin Frost (D-TX), the acknowledged architect of the 1991 map, went further: the court decision, he said, "is a major victory for Democrats" (quoted in Edsall 2001).[24]

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[24]Our own analysis indicates that the court plan probably achieved what the court sought to achieve—no affirmative help for Democrats as such but a good deal of protection for incumbents. Using the Albert Gore two-party percentage of votes aggregated for old and new districts, the partisan split in districts shows the median-mean difference in the new versus old districts changed substantially in favor of Republicans. Thus, the line changes run contrary to Representative Frost's claim of a major victory for Democrats, at least as it might refer to Democratic voters. On the other hand, concessions to incumbents did carry forward a type of victory Frost may have had in mind, a Democratic officeholder victory, inasmuch as the majority of incumbents seeking re-election in November 2002 were Democrats.

With substantial Republican victories in the 2002 state legislative elections, producing just shy of two-thirds majorities in each chamber, the legislature went back to the drawing board in 2003. After the Republican's new plan emerged from committee, in May, 51 Democrats took off for Oklahoma. Their disappearance stopped the process, but only temporarily. Governor Perry called a special legislative session in late June. The House passed the plan in July, next worked out details in light of Senate adjustments, and in October the governor approved a new district map. It received Department of Justice Section 5 approval in December and, in January 2004, received federal court approval in response to legal challenges brought by Democrats (*Sessions v. Perry* 2004).

In the November 2004 election, Republicans won 21 of the delegation's 32 seats (65.6%) with 59.7 percent of the two-party statewide vote (and a mean two-party vote percentage of 54.2). When an appeal of the 2004 *Sessions* ruling first reached the Supreme Court, in 2005, the Court remanded it for reconsideration in light of its judgment in *Vieth*. After re-examination, the district court once again ruled in favor of the state (*Henderson v. Perry* 2005), leading Democrats to renew their appeal to the Supreme Court. Without re-entertaining the question of justiciability (*LULAC v. Perry* 2006, 414), the Court rejected the claim of unconstitutional partisan gerrymandering.[25]

Our analysis of the 2004 Texas plan reaches the same conclusion. The controlling fact under our diagnostic is that there is no evidence Democrats could win a statewide majority in the years 2004 through 2010. While it may seem important to note that the median-mean comparison consistently runs against Democrats, showing the potential for vote weight harm, and while Democrats received a mean vote majority in 2006,[26] their statewide vote percentage was typically in the high 30 to low 40 percent range and never reached as high as 46 percent. Furthermore, no Democratic candidate running for statewide office won a vote majority in Texas after 2000, including through 2014.

The Texas districts from 2004 to 2010 were designed to make electoral life for Democrats more difficult than it might otherwise have been. They probably did, in many ways. Nevertheless, there is no evidence that the potential disadvantage facing Texas Democrats created actual harm to Democratic voters. Their expressed preferences for Democratic candidates were never relegated to minority status among the elected delegation as a consequence of gerrymandering. Democrats' minority status among Texas House members is the result of not casting a majority of votes.

CONCLUSION

A 2015 report released by the Political Integrity Project ranks the district boundary procedures applied in the 2012 and 2014 United States elections as having the second least integrity among 127 countries covered, ahead of only Malaysia with its significantly malapportioned and gerrymandered constituencies (Norris, Martinez i Como, and Grömping 2015, 8–11). The report holds that the United States' boundaries lack integrity because they discriminate against parties (we would say partisan voters), favor incumbents, or both (Norris, Martinez i Como, and Grömping 2015, 34). Our specific purpose has been to show the lack of integrity can be combatted with respect to discriminating against partisan voters through partisan gerrymanders. Our standard provides a means, first, for identifying the fact that a packing gerrymander has or will likely operate to the detriment of one set of partisan voters but then, next and separately, for distinguishing a legally tolerable, though odious, fact from a packing gerrymander that crosses the threshold of a constitutional violation. The standard can be applied prophylactically by mapmakers who want to avoid even short-lived discrimination and can be applied by courts that are likely to be looking at a districting plan's prospects over a long time horizon.

The initiating, fundamental quality of our standard is that it is reality based. Anyone and everyone can observe a potential for gerrymandering harm by the simple comparison of one of two parties' median district vote percentage to its mean district vote percentage. Where the median is shown to be

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[25]The Court found one district violated Section 2 of the Voting Rights Act (*LULAC v. Perry* 2006, 447). To remedy the violation Texas needed to redraw lines of five districts prior to the 2006 election. The line adjustments were at the margins; even so, it means that the 2004 election results by district are not precisely comparable to results in the subsequent election years (2006–10).

[26]The Democrats' mean majority in 2006 is a consequence of a strong turnout bias running in their favor.

persistently higher or lower than the mean, a district plan is stacked against one set of partisans. After consideration of the median-mean comparison in light of a possible turnout bias, a persistent median-mean difference records clear evidence that the lines are the knowable cause of potential weight-vote harm. Determining when and where the potential for harm has been or will likely be realized as actual harm requires a simple evaluation of whether one set of partisans, but never the other, has been or is likely to be deprived of the ability to elect a majority when they cast a majority of the votes. If this contra-majoritarian result occurs in any one election, the evidence reveals the outcome is attributable to a gerrymander effect. If the contra-majoritarianism occurs more often than not, the plan is a structural gerrymander as a factual matter. If there is evidence that intentional contra-majoritarianism is unlikely to be overcome, we find it plausible to require the courts to intervene to remedy what the political process is unlikely to remedy on its own.

The importance of being able to identify the fact of gerrymander, without any regard for constitutional permissibility, is alone an important step. It provides a framework for those charged with drawing districts to evaluate whether a plan is likely to operate as a gerrymander. Even a neutral process under the direction of a commission, a court, or a court's special master needs benchmarks to determine what it may think is fair is, by some standard, actually expected to operate as fair. The proposal here serves that purpose.

It remains unclear whether the courts can ever settle on any standard for unfair partisan gerrymandering. In anticipation that they will, our proposed standard could work well to identify the egregious cases that need judicial attention because they do not appear to hold reasonable prospects for the political process to overcome a vote-weight infirmity on its own.

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