Making Partisan Gerrymandering Fair: One Old and Two New Methods

Steven J. Brams, *New York University*

Objective. To introduce a novel way to make partisan gerrymandering fair. *Methods.* In the context of two parties, divide a state into two geographical areas, each of which contain a number of districts that are roughly proportional to the share of the statewide vote received by each party in the last congressional elections. Allow each party to unilaterally design the districts in a designated area of the state, restricted only by traditional districting principles. Adaptations may be made to account for more than two parties. *Results.* Each party gerrymanders but is limited to doing so in its designated area of the state, with results that are roughly proportional to the statewide vote. *Conclusion.* "Fair gerrymandering" is a way to counter unfair partisan gerrymandering and it is likely to reduce the number of uncontested elections and increase voter turnout.

Gerrymandering has a bad name because the party in control of a state typically divides the state into House districts that give it more than its fair share of seats in Congress. The solution I earlier proposed to this problem (Brams, 2018) is to divide the state into two parts—each roughly proportional in population to the number of votes the Democratic and Republican candidates received in the last congressional elections—and allow each party to gerrymander its part unilaterally.[1]

For example, if a state has 10 congressional districts and the Democratic Party candidates won 60 percent of the statewide vote in the previous congressional elections, it would receive a part that comprises 60 percent of the population (and six seats) and the Republican Party a part that contains 40 percent of the population (and four seats). I discuss later two new methods for determining how these parts can be determined:

1. Create a partisan replica of the entire state, insofar as possible, in each of the two parts. In the preceding example, each part would be 60 percent Democratic and 40 percent Republican, duplicating the partisan makeup of the entire state.

2. Give the majority party the right to proportionally divide the state into the two parts. The minority party would then choose whether its part is clockwise or counterclockwise of the radius of a circle that encompasses the state (more details on this method later) and be able to gerrymander this part unilaterally.

Each party would be subject to traditional redistricting principles of compactness, contiguity, respect for preexisting political boundaries, and preservation of communities of

[1]One could also use the Democratic–Republican vote in the last presidential election of each state to determine the size of the two parts. This would be more applicable in states with uncontested congressional races, wherein the statewide congressional returns are not an accurate reflection of the partisan makeup of the state.

interest. In Brams (2018), I called this *fair gerrymandering*, because each party would be able to gerrymander only the districts in its part.[2]

Background

To compare this method for constraining gerrymandering with how gerrymandering works today, consider the 2014 congressional elections in Pennsylvania, in which Republicans won 55.5 percent of the statewide congressional vote. Because they controlled the state legislature, they were able to gerrymander Pennsylvania's 18 congressional districts so that they won 13 districts (72.2 percent) and the Democrats only five in 2016.

With fair gerrymandering, the Republicans, as the majority party, would have been able to divide the state in two, with one part comprising 10 districts and the other eight, which approximates the 55.5–44.5 partisan vote split favoring Republicans in Pennsylvania in 2014. In 2016, the Republican gerrymander of its part probably would have garnered it about seven or eight of the 10 districts in its part, and the Democratic gerrymander probably would have garnered it about six of the eight districts in its part. Overall, each party probably would have won about its proportion of the statewide vote—a very different result from the 13–5 split favoring Republicans in 2016.

Ideally, of course, it would be preferable to eliminate gerrymandering entirely by having an independent commission draw the district lines of a state. Laws have been enacted in six states to do this, but it is highly unlikely that the other 44 states will move quickly to reform the districting process. (In Pennsylvania, however, a court challenge by the Democrats led to the Pennsylvania Supreme Court apportioning the state into mostly competitive districts in the 2018 elections, with each party winning nine seats that year.)

In June 2019, the U.S. Supreme Court ruled in a 5–4 decision in *Rucho v. Common Cause* and *Lamone v. Benisek* that partisan gerrymandering could no longer be litigated in federal courts, although it could be challenged in state courts, as it successfully was in Pennsylvania in 2018. Barring such a challenge, however, partisan gerrymandering will probably remain a fact of political life in most states controlled by one party for the foreseeable future. On the other hand, if agreed to by the Democratic and Republican parties in a state, fair gerrymander, in my view, would not contravene the Supreme Court decision because it would still allow partisan gerrymandering but restrict it to each party's part of a state.

If fair gerrymandering is not a perfect solution, it is a pragmatic one that constrains the degree to which gerrymandering can be exploited by one party. In Brams (2018), I suggested that the majority party be able to draw a more or less straight line that cuts the state into two parts, each roughly proportional to the votes received by each party in the last congressional elections.

What about minor parties that qualify to receive one or more congressional seats in larger states? I suggested that after the two major parties receive their parts of a state that reflect their vote shares in the previous congressional elections, minor parties would then be permitted to divide the remainder of the state according to their shares.

This is not entirely fair, because the Green Party, for example, is unlikely to win in any congressional districts. But being able to gerrymander two or more congressional districts may better enable a minority party to help its preferred major party win in these districts—as well, perhaps, as moving this party toward its positions.

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[2]Earlier work by mathematicians and data scientists has mostly been directed at showing when districting is unfair and disenfranchises voters based on statistical evidence (Duchin, 2018). The methods I discuss provide ways of rendering overall districting in a state fair.

Fair gerrymandering will work better the larger a state is. If a state has only two or three districts, the majority party may be able to divide it so as to win all of them. But with four or more districts, the minority party will have more and more ability to gerrymander its part so that it wins a proportional share of districts in the state.

A more sophisticated version of fair gerrymandering, which would require two cuts, applies the principle of "I cut, you choose." The majority party would make a cut that gives it the extra districts to which it is entitled (beyond 50 percent). In Pennsylvania in 2016, this would be a part that contains $10 - 8 = 2$ districts, which it would presumably be able to gerrymander so that it wins both.

The minority party would then be able to divide the remaining 16 districts into two equal parts, which in Pennsylvania would each contain eight districts. The majority party would then choose the part it prefers, and the minority party would get the other part. This would give each party a good chance of winning most of the districts in its eight-district part. I discuss a version of this approach, using two cuts, in the next section.

The fact that one party will predominate in its part of the state is not entirely fair to voters of the other party who live in that part. But their votes will not be entirely wasted because they will count toward how the state is split into districts two years later.

Two New Methods

Dividing a state into two parts with a straight line, with each part roughly proportional to the votes each party received in the last congressional elections, opens up a plethora of possibilities. To reduce this number drastically, the first new method I propose singles out one division as preferred.

1. Make each of the two parts, insofar as possible, a partisan replica of the entire state, using two lines, rather than one, to divide the state into two parts.

For this purpose, embed a state in a circle whose center is the *population center of mass* of the state. This is the physical point in a state about which the population is evenly distributed.

Put another way, this center equalizes the "pull" of the population in all directions. It may be in a big city, or it may be between two or more cities in an underpopulated part of the state. It is the point at which the entire population of the state can be concentrated that balances its pull in all directions.

No matter what the shape of a state, the circle in which it is embedded, and the population of the state itself, can be divided into proportional parts by two radii emanating from the population center of mass. (Think of the radii as the two hands of a clock, which effect a proportional division of the state into two parts.) The first new method selects the two radii that render each part, insofar as possible, a partisan replica of the entire state.

Thereby, each party, when it unilaterally gerrymanders its part, would face a similar task because the partisan division of each part would be essentially the same as for the entire state (e.g., 60 percent Democratic and 40 percent Republican). Of course, the distribution of the population of Democrats and Republicans in each part may be quite different, making one part easier to gerrymander than the other. Nevertheless, the fact that each party faces the task of gerrymandering a replica of the entire state, with the same partisan makeup, is one way of giving the parties similar opportunities to maximize their seat totals in their parts.

2. Determinate the radii by divide-and-choose.

The majority party would select a radius of the circle in which the state is embedded, and the minority party would choose a second radius, either clockwise or counterclockwise of the first radius, that gives it its proportional share of seats. In effect, the two radii that emanate from the population center of mass would divide the state into proportional parts, but the partisan makeup of each part may be quite different.

This method gives each party a say in determining the location of its part, which it can then gerrymander. This seems preferable to having the majority party draw a single straight line through a state, dividing it proportionally. Typically, this line would not go through the population center of mass, which seems a useful point of departure in dividing a state into two parts, but the partisan makeup of each part may be quite different.

Although the second method gives one party the choice of one radius and the other party the choice of the other radius, neither party has a choice of the radii in the first new method. But the first method gives the parties similar opportunities to gerrymander their parts because they have the same partisan makeup.

It is useful to compare the different outcomes that the two new methods might produce. Assume a state has two representatives, and the partisan division of the state (in percentages) is as shown in the following square, whose four quadrants each contain one-fourth of the state's population:

55 D, 45 R	55 D, 45 R
45 D, 55 R	45 D, 55 R

If we divide the state vertically, so one part (i.e., district) comprises the two quadrants on the left and the other the two quadrants on the right, then each district will be 50 D, 50 R. The first new method would give this division because it creates replicas of the entire state, which is 50 D, 50 R in each of the two districts.

By comparison, the second new method would give the parties, when choosing the two radii, the choice between a horizontal and a vertical division (the two radii would in fact be a diameter of the circle around the square, going through the center of the square. A horizontal division would give the Democrats the top district (55 D, 45 R) and the Republicans the bottom district (45 D, 55 R), whereas a vertical division would give the same partisan makeup (50 D, 50 R) of the left and right districts.

If the parties are risk averse, it seems likely that they would choose the horizontal division, ensuring each of one district. But if they are risk prone, they would choose the vertical division, giving each a chance of winning both districts, but also a chance of losing both or splitting them. Thus, the two methods may lead to very different outcomes, with the first giving the parties no leeway in choosing a division and the second allowing them some choice.

Neither method is a panacea in making gerrymandering fair by ensuring that each party can obtain a number of districts approximately proportional to its vote share in the last congressional elections. But each should facilitate the parties' ability to prevent extreme gerrymanders, whereby the party in control of a state is able to gerrymander the entire state and thereby win a disproportionate number of districts.

REFERENCES

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