GARY F. MONCRIEF
Boise State University

Floterial Districts, Reapportionment, And the Puzzle of Representation

Because of recent Supreme Court decisions involving a more permissive stance toward a "rational state policy" (*Brown* v. *Thompson*) and the challenge of partisan gerrymandering (*Davis* v. *Bandemer*), state legislatures and reapportionment commissions are left with nebulous guidelines for the next round of reapportionment plans. This article reviews some of these issues of representation in light of a specific electoral technique known as the "floterial district." Floterials are not widely understood, but they reemerged in several states in the reapportionment plans of the 1980s, and there is some speculation that floterials will be considered by more states in the 1990s. With this in mind, I discuss the specific nature of floterials and pose some problems (framed as puzzles) in the use of floterials.

Anyone familiar with U.S. politics recognizes the single-member district as the basic and most common electoral districting device in state legislatures. In addition, some state legislatures (and many municipalities) employ multimember districts for choosing representatives. There is, however, a third districting mechanism—obscure and poorly understood—that has been used off-and-on for over a century in some states. It is the "floterial district."

The floterial district is intended to provide additional representation for two or more electoral districts that are otherwise underrepresented. For example, consider the case in which the ideal population for apportionment of the state legislature is 100,000 persons per district and in which districts d_1 and d_2 each have a population of 150,000. If each district is allocated just one seat, it will be underrepresented from the ideal; if each district is allocated two seats, it will be overrepresented from the ideal. One solution to this problem is to allocate to each district, d_1 and d_2, one seat, and to allocate one additional seat to the two districts combined. In essence, a third district, comprising d_1 and d_2, is created. This third district, d_f, is a floterial district, so-called because it "floats" over the two smaller districts.[1]

By U.S. standards, the floterial district is a complex electoral mechanism. It creates a situation in which voters vote for one or more representatives as constituents of one district and then vote for one or more representatives as constituents of another, larger district. This particular example involves only two subdistricts and one floterial; the situation can become more complex when there are more than two subdistricts involved in the creation of a floterial or when at least one of the subdistricts has no representation other than that provided by the floterial.[2]

Given this level of complexity, why would a state reapportionment body opt for such a system? A floterial allows political subdivisions to remain intact while the state pursues the goal of creating equipopulous districts. Some states find, in devising reapportionment plans, that their own state constitution is in conflict with the federal constitution. The U.S. Supreme Court interprets the equal protection clause of the Fourteenth Amendment to the U.S. Constitution to mean that one person's vote must have the same value as every other person's vote. On the other hand, many state constitutions stipulate that political subdivisions—usually county boundaries—must be honored when state legislative district lines are drawn.

These two principles (one-person, one-vote, and the inviolability of political subdivisions) are often incompatible. For example, in single-member electoral districts, the one-person, one-vote criterion has come to mean that all single-member districts must have roughly equal populations. Because of population disparities between counties, this criterion cannot be precisely applied unless electoral districts cut across county boundary lines. We have, then, a conflict between the mandates of the federal and the state constitutions.

State reapportionment bodies have dealt with this conflict in at least three different ways.[3] Some states simply decide to abandon or ignore their own constitutional stipulation, recognizing that the U.S. Constitution is superior to the state constitutional mandate. A second approach, taken by the courts in Texas and Tennessee, is to honor to the extent possible the state constitutional proscription against cutting county boundaries. In other words, plans that meet the one-person, one-vote criterion while cutting the fewest county boundaries are looked upon with favor. In this situation, half of a state constitutional loaf is considered better than none at all.

Finally, at least two states, Idaho and New Hampshire, have resurrected the concept of the floterial district. Prior to the reapportionment revolution of the 1960s, a number of states used floterial districts. Texas had employed them for about 100 years, and they were found in Indiana for most of this century. The use of floterials in Tennessee was addressed in *Baker* v. *Carr*, and they have been used also in

Virginia, Oregon, Mississippi, New Jersey, Georgia, and Wyoming. Some observers believe that floterials are a promising device in future state reapportionment plans (Duncombe and Stewart 1985). Indeed, as the Supreme Court continues to find the maintenance of local political subdivisions a "rational state policy" in reapportionment plans, the possibility that other states will consider establishing floterial districts is quite real. Duncombe and Stewart, for example, take note of Robert Dixon's comment that "in theory, they [floterials] are a way of achieving greater arithmetic equality in situations where there are political subdivisions of varying sizes whose populations do not neatly accord with the representation ratio, while at the same time preserving the integrity of the boundaries of traditional political subdivisions" (1968, 461).

The key phrase in the above quotation is "in theory," since Dixon recognized that "floterial districts pose even more serious 'equality' problems—both arithmetically and politically—than do multimember districts" (1968, 511). Howard Hamilton (1967, 332) captured the essence of the situation when he observed that "application of the equal representation doctrine to floterial districts is a conundrum." In the remainder of this article we wish to explore several dimensions of this conundrum.

Puzzle #1: What Does "Equal Representation" Mean?

Legal scholars and political scientists have recognized that the Supreme Court has been indeterminate about what it means by "equal representation." There are several reasons for this ambiguity, including the general tendency of the Court to make decisions on an incremental, case-by-case basis (Mazurana 1987). One reason particularly relevant to our discussion is succinctly expressed by Dixon (1982, 8–9), "The core problem can be stated somewhat simply: our IDEALS about political representation and our implementing ELECTION SYSTEM do not fit together neatly."

One of the most comprehensive discussions of this issue is presented by Grofman and Scarrow (1981a), who identify seven criteria for individual political equality by which apportionment plans may be judged. These criteria represent seven different ways of operationalizing the concept of equal representation.[4] Grofman and Scarrow systematically demonstrate that the Court has not presented a definitive explanation of "equal representation," and they conclude that "to come to grips properly with 'equal representation', however, the court must know what is being represented and how equality of representation is to be measured. As long as the court continues to skip over the latter question, it will be unable to enunciate clear guidelines for the former" (1981a, 254).

Perhaps this point can be made clear through a simple illustration. As was previously mentioned, in single-member electoral districts, the U.S. Supreme Court tends to equate the one-person, one-vote principle with equipopulous voting districts. In other words, equal representation here means that each legislative district must contain roughly the same number of people. "Equality" is thus operationalized as "equal population of the voting districts."[5]

Where multimember districts are used, equal representation is measured by the ratio of representatives to population. Here, the mandate is that "the number of representatives must be proportional to the population being represented" (Grofman and Scarrow, 1981a, 242). Hence, a single-member district with a population of 10,000 and a three-member district with a population of 30,000 are viewed as providing equal representation. Notice that in both cases "equality" is achieved whether we use as the unit of analysis the individual voter (1/10,000 and 3/30,000 are equal voting weights) or the number of representatives (one representative per 10,000 population yields the same ratio as three representatives per 30,000 population).

Confusion arises when we consider the floterial. Under the simplest form, described earlier, we create a system in which a single-member district (A) is joined with another single-member district (B) to create a third, larger, single-member district (the floterial). Each voter now has two votes, but three representatives are chosen. Moreover, while A, B, and the floterial are each single-member districts, none of the three representatives represents a unique territory or population that is not represented by one of the other representatives. Under such circumstances, how does one measure "equal representation" or "deviation from equal representation"?

Puzzle #2: The Computational Method Controversy

One of the reasons why both Dixon and Hamilton were skeptical of floterials involves the manner in which representation is measured in such districts. While political scientists have acknowledged this problem (see, for example, Schubert and Press 1964), in recent years the issue has been confined to legal briefs and footnotes in court opinions. Because it is a controversy with which few contemporary political scientists are familiar, I will elaborate this particular puzzle at some length.

There are at least three ways to compute deviation from the ideal in floterial districts. The courts have entertained two of these, generally known as the aggregate method and the component method. An essential point is that these two methods derive from very different assumptions about the meaning of representation. The third method we will call the reciprocal method; to my knowledge it has never been considered before the U.S. Supreme Court, although in many ways it best captures the "equal weight" dimension of the one-person, one-vote principle.[6]

As a simple illustration of the computational issue, imagine a situation in which the ideal population per district is 10,000, and in which County A (or subdistrict A, as a generic term) has a population of 11,000 and County B (subdistrict B) has a population of 19,000. Let us further assume that the Court is unlikely to accept more than 10% total variation between districts.[7] Under this constraint, we cannot simply assign one representative to county A and two representatives to County B; the variation from the ideal would be (10,000–11,000)/10,000 or −10% in County A and at least 5% in County B, totalling at least 15%. We could create three single-member districts, each with the ideal population of 10,000, but in so doing we would violate the state constitutional prohibition against creating legislative districts that cut across county boundaries.

The floterial solution is to assign one representative to County A, one representative to County B, and one representative to a floterial district comprising both Counties A and B. Under the aggregate method of computation, the deviation from the ideal population would be zero, arrived at as follows: 10,000 people in County A are represented by representative A; 10,000 people in County B are represented by representative B, and the remaining 10,000 (1,000 "excess" population from County A and 9,000 "excess" population from County B) are represented by the floterial representative. There are three representatives, a population of 30,000, and thus one representative per 10,000 people. The general formula for determining deviation from the ideal—that is, deviation from "equality"—is

$$D = IPR - \frac{a + b}{R} ,$$

where IPR = ideal population per representative,
a = population of county A,

b = population of county B,
R = total number of representatives from counties A and B, and
D = deviation from the ideal.

Thus, in our example: 10,000 − [(11,000 + 19,000)/3] = 0.

Computationally, the obvious analogy here is with representation in multimember districts. We take the total population and divide by the number of representatives to get a representative-per-population ratio. There is, however, an important difference between the floterial district and the multimember district: in the latter, each voter casts a number of votes equal to the number of representatives being chosen. In our floterial district, each voter casts only two votes, but three representatives are chosen. The weight of those votes depends on the relative population of the two subdistricts (e.g., counties) that compose the floterial.

In the example above, the component method accounts for some of this variation. The persons in County A provide all of the votes for Representative A and 11,000/30,000 of the votes for Representative F. These people are thus represented by 1 + 11/30 or 1.37 representatives. The people in County B provide all of the votes for Representative B, and 19,000/30,000 votes for Representative F. Under the component method, they are presumed to be represented by 1 + 19/30 or 1.63 representatives. In terms of representatives-per-population ratios, the people in County A have 11,000/1.37 or 8,029 people per representative, while the people in County B have 19,000/1.63 or 11,656 people per representative. The deviation from the ideal of 10,000 is (10,000 − 8,029)/10,000 = 19.71% in A and (10,000 − 11,656)/10,000 = − 16.56% in B. The total deviation is 19.71 + 16.56 = 36.27%. The general formula for deriving the total deviation from the ideal is

$$D = \left| \frac{IPR - \dfrac{a}{1 + \frac{a}{c}}}{IPR} \right| + \left| \frac{IPR - \dfrac{b}{1 + \frac{b}{c}}}{IPR} \right| ,$$

where c = total population of counties A and B.

The third method, the reciprocal, is based on voting weights of the individual voter and considers the relative populations of the two subdistricts in both the floterial and subdistrict calculations of variance. The general formula to determine variation from the ideal is

$$D = \left| \frac{\left(\frac{1}{a}+\frac{1}{c}\right) - \frac{1}{IPR}}{\frac{1}{IPR}} \right| + \left| \frac{\left(\frac{1}{b}+\frac{1}{c}\right) - \frac{1}{IPR}}{\frac{1}{IPR}} \right| .$$

In our example, for each voter in County A the weight of the vote is 1/11,000 (his/her vote in the district A election) plus 1/30,000 (his/her vote in the floterial election). The total vote weight for each individual in County A is

1/11,000 + 1/30,000 = .000091 + .000033 = .000124.

For the voter in County B, the figures are

1/19,000 + 1/30,000 = .000053 + .000033 = .000086.

The ideal weight is .0001 (1/10,000); the deviation from the ideal in County A is (.000124 − .0001) / .0001 = 24%; for B it is (.000086 − .0001) / .0001 = −14%. The total deviation is 24 + 14 = 38%.

From the examples above we can see that each of the three methods of calculation yield different results. More important, each method assumes a different operationalization of the concept of equal representation. The aggregate method measures representation as the ratio of representatives to total population in the floterial district. The component method operationalizes the concept as representatives per subdistrict unit (county) population. The reciprocal method measures representation as the voting weight of the individual in each subdistrict.

Which of these measures is the most appropriate measure of "equal representation"? The answer, of course, depends on the definition of representation, and we have already noted that the Court has not offered a precise, consistent meaning for that concept. What does seem clear is that, except in the case where populations between the subdistricts is exactly the same, the aggregate method will always yield lower deviation figures than either the component or the reciprocal methods. Moreover, as was previously mentioned, the fact that three representatives are chosen but each voter gets to vote for only two of them makes this situation conceptually different from the situation in multimember districts. If we accept the Court's statement in *Reynolds v. Sims* (563) that "weighting the votes of citizens differently, by any method or means, merely because of where they happen to reside, hardly seems justifiable" to mean that equal representation is to be operationalized as equal individual vote weight, then the aggregate method appears to be an inappropriate operationalization and the reciprocal method appears to be the most appropriate.

Apparently the U.S. Supreme Court does not recognize, or refuses to acknowledge, that the three computational methods stem from different working definitions of the concept of "equal representation." When the aggregate method was challenged in *Mahan* v. *Howell* (319), the Court said, "We decline to enter this imbroglio of mathematical manipulation and confine our consideration to the figures actually found by the [district] court and used to support its holding."

On the other hand, several lower courts have recognized the conceptual issue involved, at least in regard to the difference between the aggregate and component methods. In *Kilgarlin* v. *Martin*, a federal district court disallowed the aggregate method and demonstrated, at some length, why the component method was more appropriate. The decision was overturned by the U.S. Supreme Court in *Kilgarlin* v. *Hill*, but on grounds unrelated to the methodology. Because the U.S. Supreme Court has refused to address the computational issue directly, the lower courts are left to decide the issue without guidance.[8]

The two most recent cases stem from Idaho (*Hellar* v. *Cenarussa*) and New Hampshire (*Boyer* v. *Gardner*). In both instances the courts (the State Supreme Court in Idaho and a federal district court in New Hampshire) accepted deviation measures based on the aggregate method of computation. This method indicated a maximum variance of 9.65% in Idaho and 13.74% in New Hampshire. The component method yields results of over 41% and 70%, respectively.

Puzzle #3: The Computational Methods and Political Outcomes

In the preceding section we saw that the three computational methods yield different measures of deviation from equality. This result suggests that our decision whether to accept or reject a particular floterial configuration as equitable may depend on the particular computational method applied. We are more likely to conclude that a particular floterial arrangement is inequitable if we measure deviation by the component or reciprocal methods. Further, as the last section argued, the reasoning that supports the aggregate method may be flawed, and the component method and (especially) the reciprocal method are better operationalizations of "equal representation" when we take that term to mean equal voting weight of individuals.

However, if we consider actual political outcomes based on communities of interest or interest groups, the result is different under some circumstances. In cases where the subdistrict populations are unequal, the subdistrict with the largest population will always appear to be underrepresented when the component or reciprocal methods are used. When these population variations are great (as in our previous example, where A = 11,000 and B = 19,000), the component and reciprocal methods will show that the larger subdistrict is substantially underrepresented, because the ratio of representatives to population will be lower than that for the less populous subdistrict. This result is obtained because these methods of calculation divide the "share" of district C's representative proportionately between A and B by population. It is the disparity between the populations of A and B that causes the difference in their share of C. However, if we assume that A and B represent distinct communities of interest and if we assume that voters act rationally, then the floterial representative will always be chosen by the voters in B, and B will actually be overrepresented.

Consider our previous example: A will elect one representative (from subdistrict A), B will elect one representative (from subdistrict B), and B will elect the floterial representative (because there are 19,000 votes in B and only 11,000 votes in A). Thus, with 63% of the voters, B gets 67% of the representatives. If we rely only on the results of the component or reciprocal method, we are very likely to conclude that the voters in B are substantially (36.27% by the component method, 38% by the reciprocal) underrepresented in relation to the voters in A. In fact, however, the voters in B will always be able to control the election of two of the three representatives. Each county is able to elect its own representative in the respective districts A and B, but B's larger population means that it will control the electoral outcome in C as well. It is this disparity in their electoral influence within district C that causes the difference in outcome.

The aggregate method, on the other hand, makes no distinction between the voters of A and B; it treats them as an aggregate group (i.e., it is incapable of recognizing distinct communities of interest). The aggregate computational method treats all three representatives together, as if the floterial were a multimember district. (If it were indeed a multimember district, however, the voters in B would be able to control all 3 seats!)

We are left with the anomaly that the aggregate method, while suspect on theoretical grounds, may under some conditions result in our making more appropriate decisions about the equity of a floterial scheme than the component or reciprocal methods would.[9] The aggregate method is more valid when subdistricts are of disparate size precisely because it pays no attention to the population disparity.

Puzzle #4: How Do We Compare Equality between Different Floterials?

Thus far, we have concentrated on the three computational methods and the issue of equal representation between subdistricts within a particular floterial district. But what about the comparison between the subdistricts in different floterials? The goal in the creation of floterials is to combine subdistricts with populations that differ from the ideal size until the total "excess" population of all the subdistricts in the floterial approximates the ideal population for a single district. For example, consider a state apportionment plan in which the ideal population is 10,000. County X has a population of 12,000, and is combined with County Y, with a population of 18,000, to create a floterial with a total population of 30,000. Further, Counties J, K, L, M, and N each have a population of 12,000, and they are combined to create a floterial with a total population of 60,000. In the first instance two counties (X and Y) with populations of 2,000 and 8,000 above the ideal, are given an additional representative to accommodate these "excess" 10,000 people. In the second instance, five counties, each with an excess of 2,000, are together awarded an additional representative to accommodate the total 10,000 excess population. Given the reasoning behind the creation of floterial districts, each of these two floterials is valid. But are their constituents equally represented? Compare, for example, Counties X and J. Each has a population of 12,000. Each is a district for the election of one representative, and each is part of a floterial for the election of an additional representative.

Computations based on the aggregate method would lead us to conclude that X and J have equal representation (the deviation from the ideal population is zero in each). Computations based on the component method would lead us to conclude that they are not equal. County X has a deviation from the ideal of 14.3%, derived as follows:

$$D = \frac{10{,}000 - \dfrac{12{,}000}{1 + \dfrac{12{,}000}{30{,}000}}}{10{,}000} = \frac{10{,}000 - \dfrac{12{,}000}{1.4}}{10{,}000} = \frac{1{,}428.6}{10{,}000}.$$

According to the aggregate computation, County J has a deviation from the ideal of 0%:

$$D = \frac{10{,}000 - \dfrac{12{,}000}{1 + \dfrac{12{,}000}{60{,}000}}}{10{,}000} = \frac{10{,}000 - \dfrac{12{,}000}{1.2}}{10{,}000} = \frac{10{,}000 - 10{,}000}{10{,}000} .$$

The reciprocal method would yield similar results. Thus, when counties with equal populations in our two floterials are compared, the component and reciprocal methods indicate that X is overrepresented in relation to J; the aggregate method indicates that there is no difference. Intuitively, we recognize that a county of 12,000 in a floterial of 60,000 is not accorded the same weight as a county of 12,000 in a floterial of 30,000. But computations based on the aggregate method would have us conclude that there is no difference in the representation accorded X and J, while computations based on either the component or reciprocal method would indicate differences.

Conclusion

Like Duncombe and Stewart, I believe that floterials may become more prevalent in the reapportionment plans of the 1990s. With that likelihood in mind, I have discussed the nature of floterials and some of the issues confronting their use. In particular, I have pointed out that floterials are conceptually different from either single-member or multimember districts and that they present some puzzles, both conceptual and methodological.

This discussion does not mean that states should avoid the use of floterial districts altogether. Under certain circumstances—that is, when the difference in population between the subdistricts is small—floterial districts may provide a reasonable solution to the problem of accommodating the requirements of both the federal and state constitutions. Nor is strict adherence to population equality necessarily the primary goal of state legislative reapportionment. Representation of communities of interests—be they counties, racial minorities, political parties, or whatever—may be considered a very legitimate goal in the districting process. But by refusing to come to grips with the computational issues discussed in puzzles 2, 3, and 4 above, the Court misses an opportunity to elucidate the concept of representation. In fact, the last three puzzles identified in this paper are puzzles precisely because the Court has not resolved the first puzzle, the definition of the term *equal representation*.

There is a telling similarity between the courts' treatment of the floterial conundrum and their handling of the specific mathematical technique known as the Banzhaf Index. Grofman and Scarrow (1979; 1980; 1981b) have shown how the courts misunderstood or misapplied the Banzhaf Index to the question of representation. For example, they note that

> no court, whether state or federal, has ever really fully understood the reasoning underlying the mathematical arguments in Banzhaf; or successfully distinguished among what, upon careful analysis, turns out to be the three different criteria suggested by Banzhaf. . . or realized that while these three criteria coincide for single-member districts systems, for other systems (especially weighted voting systems) the three criteria may lead to different policy recommendations (1980, 124–25).

The Banzhaf Index and the puzzles posed by floterial districts are two distinct issues, but they are symptomatic of the larger puzzle—how to define representation. Until that particular puzzle is solved, all others involving reapportionment are riddles wrapped in enigmas.

Gary F. Moncrief is Professor of Political Science, Boise State University, Boise, Idaho 83725.

NOTES

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1. Floterials have been called by other names. In Indiana, they were referred to as "shared districts," in Texas "flotorials," and in Virginia "floaters."

2. For example, in Idaho, there is a floterial in which two counties (Boundary and Bonner) together elect one senator, another two counties (Benewah and Shoshone) elect another senator, Kootenai County elects two senators on its own, and all five counties combine to form a floterial district that elects an additional senator.

Until recently it was a common practice in Texas to combine a sparsely-populated county without independent representation with another, larger, county (with one or more representatives of its own) to form a floterial. Hence, the smaller county had no representation except that afforded by the floterial. Under such circumstances, the votes of the sparsely-populated county were overwhelmed by those of the larger county. This practice seems to have ended in Texas after the federal district court's decision in *Kilgarlin* v. *Martin;* see also *Graves* v. *Barnes.* In Indiana, a similar situation appears in *Whitcomb* v. *Chavis* and its predecessors, *Stout* v. *Hendricks* and *Stout* v. *Bottorff.*

3. One might argue that the Court has opened the door for a fourth way to handle this conflict. As an article I coauthored states, "It may be argued that the issue of computational method in floterial districts is irrelevant in light of *Brown* v. *Thompson* (1983), in which the Supreme Court showed a willingness to permit states greater latitude in 'pur-

suing rational state policy'. Language in Brown, however, suggests that the case should be narrowly construed" (Moncrief and Juola, 1988, 748). See this article for a detailed discussion of the various court cases involving floterial districts.

4. Clearly, there are more than seven operationalizations. Grofman and Scarrow are concerned with criteria that are relevant to individual political equality. If we consider equality of representation of communities of interest, the number of operationalizations would be greater.

5. As many scholars have pointed out, this definition ignores the fact that equal population does not necessarily mean an equal number of qualified voters in the district. See Schubert and Press (1964) for one of the earlier statements of this problem.

6. Although the theory behind the reciprocal method is different from that behind the component method, they tend to yield similar results.

7. The 10% deviation standard is used for illustrative purposes. The Court has accepted greater variation in those plans that could be justified as "in pursuit of a rational state policy."

8. While the court has not addressed this issue head-on, several individual justices have wrestled with the computational problem. See the separate opinions of Justices Clark and Harlan in *Baker* v. *Carr.*

9. In the example discussed in the text of this paper, the aggregate method does reveal equity better. There are other situations in which it may not do so, particularly in cases where the communities of interests are not bipolar. For example, in circumstances where the subdistricts have different populations and where three political parties (or interest groups, etc.) are involved, the aggregate method may substantially undervalue the representation of the second-largest political party.

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