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*Partisan and Incumbency Effects of 1970s Congressional Redistricting**

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We review earlier tests and propose several new tests of two rival hypotheses concerning the drawing of lines for congressional districts: (1) districting is partisan in nature and favors the candidates (including incumbents) of one party over those of the other, and (2) districting is bipartisan in nature and will equally favor incumbents of both parties. Analyzing data from the 1970s congressional redistricting leads us to reject both hypotheses (with only a handful of states as possible exceptions). Instead, we conclude that on balance congressional redistricting in the 1970s preserved the status quo; that is, neither party gained at the expense of the other, and incumbents did not benefit at the expense of challengers, with the qualification that incumbents were not forced to run against each other. The haves kept what they had; they did not, by and large, do better. The paper also seeks to explain why “minimal change” is the most common redistricting pattern.

Introduction and Literature Review

Measuring the partisan effects of redistricting schemes has taken on new importance in the light of a 1984 federal court decision holding Indiana’s legislative plan to be an unconstitutional attempt by Republicans to dilute Democratic voting strength (Grofman, 1985a; Grofman, Migalski, and Noviello, 1985; Cain, 1985b; Niemi, 1985). There are two common, competing views of redistricting. One, a view most commonly held by journalists and the general public, sees redistricting as a contest for partisan advantage.¹ The other view, which has become the common wisdom among political scientists (Mayhew, 1971; Ferejohn, 1977; Bullock, 1975,

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¹In the 1980s, for example, articles on reapportionment in *Newsweek* and *Time* devoted considerable attention to states like Indiana and California where various peculiarly shaped districts had allegedly been cleverly crafted for partisan gain by the party controlling the legislature (Democrats in California, Republicans in Indiana).

1982, pp. 432–33), is that redistricting serves largely to protect incumbents. We shall review earlier tests and present several new tests of these two seemingly rival hypotheses in the context of 1970s congressional reapportionment:

HYPOTHESIS 1: Districting is partisan in nature and seeks to favor the candidates (including incumbents) of one party over the other.

HYPOTHESIS 2: Districting is bipartisan in nature and will equally benefit the candidates, especially incumbents, of the two parties.²

In our view the debate over the effects of redistricting has often been misdirected for several reasons. First, in a world of electoral uncertainty, partisan and bipartisan gerrymandering resemble each other. Second, tests in the early literature cannot distinguish between these rival hypotheses—as we shall document below. In particular, like Bruce Cain (1985a) and David Gopoian and Darrell West (1984), we shall argue that a proper test must use a measure of partisan impact which is independent of actual election outcomes and of changes in the geographic shapes of districts. Third, to understand national patterns, one must disaggregate data to look at the state-by-state impact of redistricting; in particular, we need to look at the differences between states with divided party control (or court-ordered redistricting) and those under one-party dominance, since only in the latter is there an a priori reason to expect partisan gerrymandering. Failure to introduce this control is a major limitation of various early studies, including that by Bullock (1975). Fourth, it is necessary to examine redistricting effects in a fashion that goes beyond tracing the fate of those incumbents of each party who seek reelection. Most studies (e.g., Gopoian and West, 1984) have neglected the fact that incumbent displacement through manipulation of district boundaries can affect which incumbents choose to run for reelection, or have neglected to consider what happens in newly created open seats. Finally, previous tests of the two basic competing hypotheses fail to allow for the possibility that the two hypotheses identified above are not exhaustive, and leave out an important third alternative.

HYPOTHESIS 3: Districting changes are minimal.

Hypothesis 3 in effect serves as our null hypotheses—no difference, that is, districting may be *neither* partisan nor bipartisan.

In our view a proper measure of partisan effects must use the same yardstick to compare the partisan composition of districts before and

² Within the political science community, however, there is dispute as to whether the post-*Baker v. Carr* reapportionment “revolution” actually furthered the advantages of incumbency (cf. Tuftes, 1973; Ferejohn, 1975).

after reapportionment. None of the authors who have looked at 1970s congressional reapportionment makes use of such a measure. Our yardstick for 1970s congressional elections will consist of the number of votes in a district cast for the Democratic and Republican presidential candidates in 1968. The methodology we propose, however, is a very general one which may be applied to analysis of future rounds of redistricting at the congressional, state, or local levels.

Consider a district which changed between 1970 and 1972 because of redistricting. The 1970 boundaries of this district describe a set of voters who voted in the 1968 presidential election and cast a certain proportion of the vote for the Democratic presidential candidate (Hubert Humphrey). The 1972 boundaries define a different (but partially overlapping) set of voters who cast a different proportion of votes for the Democratic presidential nominee in 1968. The difference between these proportions is a measure of the extent to which redistricting made the district more Democratic or Republican. While the 1968 presidential vote is not a perfect predictor of outcomes of congressional elections because of incumbency and election specific factors, the change in district makeup signaled by an increase or decrease in votes for the Democratic nominee is an excellent indicator of *change* in the partisan composition of the district, and it is this change that we shall be concerned with.

Our analysis is similar to that by Cain (1985a) and Gopoian and West (1984) in that we develop an exogenous measure of partisan strength that is identical for the district both before and after reapportionment.³ But unlike Cain, we study all states rather than only one. And unlike Gopoian and West, we perform auxiliary analyses to test for subtle features of gerrymandering such as incumbent displacement and differential treatment of former state legislators, which a more highly aggregated analysis must necessarily miss. Also, unlike Gopoian and West, who use a linear model with percentage change in voting strength as the dependent variable, we use a logit form of estimation in which candidate success is treated as a dichotomous variable. By using the

³Cain (1985a) uses party registration figures in California congressional districts before and after 1980s redistricting as his baseline rather than using votes for presidential or statewide party candidates. We regard registration changes as a reasonable measure of changes in underlying party strength, especially for analyses confined to a single state. However, the way in which party registration figures translate into votes for a party's congressional candidate may vary from state to state, and there may also be some within-state variation. The same is true for the relationship between presidential vote and congressional vote. In recognition of this fact we have performed separate analyses for Northern and Southern states, the categories between which this variation can be expected to be most important.

probability of candidate success or failure as our dependent variable, our model permits the effect of changes in partisan strength to vary with the base level of party strength in a district. Thus, some small level of change in party strength may be shown as having a major effect if it occurs in a district which is potentially competitive, but will be shown as insignificant if it occurs in a district which is safe for one party or the other, since what is being measured is the effect of the change on the probability of electoral victory.⁴

⁴Gopoian and West (1984) compare the 1980 percentage of the vote Carter received in the prereapportionment districts with what Carter's percentage would have been in the redrawn districts. They define a Partisan Redistricting Index as the difference between the Carter percentage in the old and new districts for each member. We find their use of this index troubling. While the analysis we present below shares with Gopoian and West (and with Cain, 1985a) the use of an exogenous measure of partisan strength that is identical for both prereapportionment and postreapportionment districts, our use of a logit measure, rather than a simple difference of percentages as in Gopoian and West, avoids the problem that the real effect of a change in partisan strength in a district must be judged relative to baseline strength. For example, a district which shifts from 90 percent Democratic to 80 percent Democratic does not have the same reapportionment significance as one which shifts from 60 percent Democratic to 50 percent Democratic. Gopoian and West (1984, p. 1083) claim that "Democrats appeared to trade security for seats to boost their aggregate seat victories." Unfortunately, their measure of security loss is in terms of a score on their Partisan Redistricting Index. Thus, it may well be that the security losses of Democrats found by these authors (in giving up, e.g., percentage points of voting strength in districts which remain guaranteed-safe districts) are more apparent than real. In like manner, if one Republican incumbent has Republican strength added to his already safe seat, but another Republican loses strength in his previously competitive seat, the Gopoian and West (1984) linear model will treat that as a net wash, even though the actual consequence has been a significant decline in the number of seats Republicans can expect to win.

Another problem with the Gopoian and West (1984) study, which is not shared with other recent work (e.g., Cain, 1985a; Schwab, 1985) or with the analysis which we present below, is that they fail to take into account incumbent displacement. Thus, because the Republican congressional incumbents in California left in office after Philip Burton's clever gerrymandering (17 in 1983, compared to 21 in 1981, with the two new seats also going to Democrats) have very safe seats, safer on average even than the seats of Democratic incumbents, Gopoian and West conclude that Republicans have benefited from the 1980s California reapportionment. This is, to put it simply, ludicrous, and it is at variance with the conclusions of all other authors, as Gopoian and West acknowledge (1984, p. 1083). The upshot of the 1980s manipulation of congressional boundaries in California was that Republicans were severely *disadvantaged* by the Democrat's skillful gerrymandering (Grofman and Migalski, 1985). The mode of analysis used by Gopoian and West (1984) is incapable of picking up this phenomenon, and it is thus severely limited as a tool for analysis of reapportionment impact. As Schwab (1985, p. 151) correctly notes, the Democratic gerrymander in California "destroyed several Republican districts and created five new districts of which Democrats won four." Indeed, six Republican incumbents were paired into three districts (Grofman and Migalski, 1985).

Most important, of course, our study is of congressional reapportionment in the 1970s, not 1980s. As a number of authors (notably Bullock, 1982; Schwab, 1985; Grofman, 1982a; Born, 1985) point out, redistricting in the 1970s differed from that in the 1980s in several respects: the greater concern for exact population equality in the 1980s, the special protections offered to black and Hispanic populations by the new language of the Voting Rights Act, and the greater potential sophistication of computer-assisted gerrymanders. Our new tests, including the only application of the exogenous measurement of partisan strength method to 1970s data, combined with a reanalysis of earlier work, permit a definitive conclusion about the extent of partisan and bipartisan congressional gerrymandering in the 1970s. They enable us to reconcile the somewhat divergent findings of previous authors who studied that period (Bullock, 1975; Noragon, 1973, in particular).⁵ In addition, we provide a framework for analysis that can be applied to the study of reapportionment for any period or any legislative body.

⁵Bullock (1975, p. 575) asserts in his conclusion that, "although examples of redistricting to achieve partisan advantage have been documented, such instances succeeded so rarely that their impact was invisible in the data presented here." We believe, however, that the five tests which Bullock uses do not, in fact, establish the absence of partisan gerrymandering, although they do show that, overall, at the national level incumbent reelection success is little affected by redistricting. The principal difficulty with Bullock's analysis is that it is based largely on a visual characterization of which districts have been redrawn. Geographically redrawn districts are not necessarily districts which have changed in partisan voting strength. District boundaries may shift, but partisan composition may shift not at all, or may shift in ways which enhance incumbent reelection chances.

Noragon (1973), on the other hand, claims that redistricting in the 1960s helped the Republicans. Noragon (1973, p. 319) also concludes that "Republicans did very well after redistricting primarily in Southern and Border states," but this conclusion is based on changes in outcomes in these states which, in our view, may not have been caused by redistricting. The differences between Bullock and Noragon may be accounted for in part by the incomplete overlap of the periods each studied and in part by methodological problems raised by the different forms of analysis used. Noragon (1973, p. 319) bases his claim of a pro-Republican redistricting impact primarily on the observation that of 41 recognizable districts altered by redistricting in the 1960s, 29 became more Republican while only 12 became more Democratic, and that of those seats that changed hands, 14 went to Republicans and only four to Democrats. We are, however, quite skeptical of Noragon's claim. Looking for reapportionment impact only in a handful of transformed districts may miss key effects or even mistake directionality. The fact that a given district has not been redrawn does not mean that it is not part of the calculations of reapportionment decision makers. To choose to leave a particular district untouched but to change another (especially another with comparable population deviation) is often a political decision (Grofman, 1983). Similarly, the fact that a district now exhibits different partisan outcomes than before being redrawn does not guarantee that it is the change in boundaries which caused the change in outcomes.

Cui Bono: Aggregate-Level Analysis

To estimate the partisan effects of the 1972 congressional reapportionment, we adapt the method described in Amihai Glazer and Marc Robbins's work (1985) to develop a prediction equation based on the results of the 1968 presidential election which, when applied to any congressional district, gives us the probability the Democratic congressional candidate will win in that district. We look at 41 of the 42 states which underwent reapportionment between 1970 and 1972 ($N = 418$).⁶

The *Almanac of American Politics* provides 1968 presidential election results by congressional districts (CDs) for all CDs in both 1970 and 1972 and also identifies the match-up (if any) between 1970 CDs and their 1972 equivalents. In general, this identity is established by tracking the residence of the 1970 incumbent. In a few cases the match-up is based on "continuity" of the district. In all cases we have followed the *Almanac's* match-up method. We have identified 401 districts that correspond in both years. Whenever two incumbents were paired, the old district was taken to be the district of the winning incumbent. Thus, open seats are included in this part of our analysis if they were previously occupied but not if they were newly created. Because those states included 11 new seats, we are thus dealing with 98.5 percent (401/407) of the nonnew seats in these states (see Table 1).

Because election success is a dichotomous variable, we develop this prediction equation in logit form. Separate estimates are made for Northern and Southern states (see fn. 3).⁷ The logit form allows us to take into account the fact that, for safe seats, even large changes in partisan composition may have only minimal impact on reelection likelihood, while, for marginal seats, even small changes in partisan composition may have a large impact on reelection odds.

Our prediction equation for districts in Southern states is: Probability that Democratic congressional candidate wins is $e^y/(1 + e^y)$

where

$$Y = -7.45 + 0.11 \times (\text{percentage Wallace vote in that district}) \\ + 0.17 \times (\text{percentage Humphrey vote in that district}).$$

⁶ Five states—Alaska, Delaware, Nevada, Vermont, and Wyoming—had only one member of Congress in 1970. North Dakota had two representatives in 1970 but only one in 1972. Maine and Hawaii did not redistrict in 1971 or 1972. We also omitted Washington because of difficulties in obtaining the data.

⁷ Other forms of regression, e.g., probit, would also have this desirable feature and would generally yield similar results.

TABLE 1
1972 Congressional Reapportionment Information for States with
More than One Congressional Representative

State	Redistricting Plan Done by	Redistricting Approved	1970 Composition of Congressional Delegates		1970 Partisan Control	
			D	R	Upper House	Lower House
Alabama	Legislature	Jan. 1972	5	3	D	D
Arizona	Legislature	Mar. 1972	1	2	R	R
Arkansas	Legislature	Mar. 1971	3	1	D	D
California	Legislative plan vetoed by governor imposed as temporary expedient by state Supreme Court	1971 for ^a 1972 only	20	18	D	D
Colorado	Legislature	May 1972	2	2	R	R
Connecticut	Federal Court	July 1972	4	2	D	D
Florida	Legislature	Apr. 1972	9	3	D	D
Georgia	Legislature, after Justice rejected first bill	Feb. 1972	8	2	D	D
Hawaii	Legislature	July 1969	2	0	D	D
Idaho	Legislature	Apr. 1971	0	2	R	R
Illinois	Federal Court	Sept. 1971	12	12	Tie	R
Indiana	Legislature	Apr. 1971	5	6	R	R
Iowa	Legislature	Mar. 1971	2	5	R	R
Kansas	Legislature	Mar. 1971	1	4	R	R
Kentucky	Legislature	Feb. 1972	5	2	D	D

Governor at Time of Redistricting	Reapportionment Seat Gain or Loss	1972 Composition of Congressional Delegates		No. of Incumbents Put Together in Same District (Based on 1970 Residence)	Comments
		D	R		
D	-1	4	3	2(D)	Democrat incumbent dies: his seat split up.
R	+1	3	1	0	
D	0	3	1	0	
R	+5	23	20	2(D)	
R	+1	2	3	0	
R	0	3	3	0	Court plan resembled legislative plan.
D	+3	11	4	0	Three new districts est.: 1D, 1R, 1 toss-up.
D	0	9	1	0	
D	0	2	0	0	
D	0	0	2	0	
R	0	10	14	4(D) ^b	Plan passed by 2-1 vote (Judge = 2R,1D); plan thought to favor Rs.
R	0	4	7	0	Competitive/Rep.
R	-1	3	3	2 (1D,1R)	Plan is one of 12 "nonpartisan" plans drawn by Univ. of Iowa Computer Ctr.
D	0	1	4	0	
D	0	5	2	0	Congress. delegation played role in drafting bill; plan thought to be incumbent preserving.

TABLE 1—continued

State	Redistricting Plan Done by	Redistricting Approved	1970 Composition of Congressional Delegates		1970 Partisan Control	
			D	R	Upper House	Lower House
Louisiana	Legislature	May 1972	8	0	D	D
Maine	Districts remain unchanged	—	2	0	R	R
Maryland	Special Redistricting Task Force is advisory to legislature	Apr. 1971	5	3	D	D
Massachusetts	Legislature	Nov. 1971	8	4	D	D
Michigan	Federal Court	May 1972	7	12	Tie	D
Minnesota	Legislature	June 1972	4	4	Ostensibly nonpartisan, but actually R	
Mississippi	Legislature	Feb. 1972	5	0	D	D
Missouri	Federal Court	Feb. 1972	9	1	D	D
Montana	Legislature	Mar. 1971	1	1	D	R
Nebraska	Districts remain unchanged	—	0	3	Nonpartisan	
New Hampshire	Legislature	Mar. 1972	0	2	R	R
New Jersey	Federal Court	Apr. 1972	9	6	R	R ^d
New Mexico	Districts remain unchanged	—	1	1	D	D
New York	Legislature ^c	Mar. 1972	24	17	R	R
North Carolina	Legislature	Apr. 1971	7	4	D	D
Ohio	Legislature	Jan. 1972	7	17	R	R

Governor at Time of Redistricting	Reapportionment Seat Gain or Loss	1972 Composition of Congressional Delegates		No. of Incumbents Put Together in Same District (Based on 1970 Residence)	Comments
		D	R		
D	0	7	1	0	R won in district where D inc. had retired.
D	0	1	1	0	
D	0	4	4	2(D)	
R	0	9	3	0	Changed composition of his district led one R to retire.
R	—	7	12 ^c	4(R)	5 R incumbents ran in districts other than where their homes were.
D	0	4	4	0	
D	0	3	2	0	Seat numbering changed.
D	0	9	1	0	Court plan resembled house legislative plan, protected incumbents.
D	0	1	1	0	
D	0	0	3	0	
R	0	0	2	0	
R	0	8	7	2(D)	Similar to R Senate plan.
D	0	1	1	0	
R	-2	22	17	4(D)	Population loss in NY City; D seats lost were those of reformers.
D	—	7	4	0	
D	-1	7	16	0	1R retired.

TABLE 1—continued

State	Redistricting Plan Done by	Redistricting Approved	1970 Composition of Congressional Delegates		1970 Partisan Control	
			D	R	Upper House	Lower House
Oklahoma	Legislature	Apr. 1972	4	2	D	D
Oregon	Legislature	July 1971	2	2	D	R
Pennsylvania	Legislature	Jan. 1972	14	13	D	D
Rhode Island	Legislature	Jan. 1972	2	0	D	D
South Carolina	Legislature	Nov. 1971	4	2	D	D
South Dakota	Legislature	Mar. 1971	2	0	R	R
Tennessee	Legislature, after overriding governor's veto ^f	Apr. 1972	5	4	D	D
Texas	Legislature ^g	June 1971	20	3	D	D
Utah	Legislature	Feb. 1971	1	1	R	D
Virginia	Legislature	Feb. 1971	4	6	D	D
	Legislature after federal district court overturned first bill	Mar. 1972 for 1972				
Washington	Federal district court	Apr. 1972	6	1	D	R
West Virginia	Legislature	Mar. 1971	5	0	D	D
Wisconsin	Legislature	Nov. 1971	5	5	R	D

SOURCES: *Congressional Districts in the 1970's*, 2d ed. 1974; *America Votes*, 1972.

NOTES: ^aState Supreme Court devised a plan in 1973 for 1974 and after.

^bMikva (D) was put in with another D but ran in a different district (and lost). Not counted among incumbents placed together.

^cCongressman Riegle was elected in Michigan in 1972 as a Republican and is listed as such. In February 1973 he switched to the Democratic party.

Governor at Time of Redistricting	Reapportionment Seat Gain or Loss	1972 Composition of Congressional Delegates		No. of Incumbents Put Together in Same District (Based on 1970 Residence)	Comments
		D	R		
D	0	5	1	0	1R district est. to have become more competitive.
R	0	2	2	0	
D	-2	13	12	4 (2D,2R)	2 retirees in combined districts.
D	0	2	0	0	First congressional redistricting in 40 years.
D	0	4	2	0	
D	0	1	1	0	Little population change.
R	-1	3	5	2(D)	2R seats threatened; 1D seat eliminated.
D	+1	20	4	0	
D	0	2	0	0	Little pop. change.
R	0	3	7	4(R)	2Rs retired.
				6 (4R,2D)	2Rs, 1D retired.
D	0	6	1	0	Completely apolitical districting, but using old districts as starting point.
R	-1	4	0	2(D)	
D	-1	5	4	2 (1D,1R)	

^dIn 1971 the New Jersey House had 40 Democrats and 39 Republicans.

^eFederal District Court, Justice Department objection; four Brooklyn districts redrawn July 1974.

^fRepublican votes needed to override.

^gChanges made by Federal Court, June 1972 to take effect October 1973.

For districts in Northern states the prediction equation is: Probability that Democratic candidate wins is $e^Y/(1 + e^Y)$

where

$$Y = -10.59 + 0.18 \times (\text{percentage Wallace vote in that district}) \\ + 0.21 \times (\text{percentage Humphrey vote in that district}).$$

Again, we remind the reader that we use candidate success probability, *not* expected vote percentage, as our dependent variable. For example, suppose that the boundaries of a particular Northern district in 1970 defined a set of voters who had cast 50 percent of their votes for Hubert Humphrey in the 1968 presidential election and 3 percent of their votes for George Wallace. After redistricting, the new boundaries of this district define a new set of voters. Suppose that this set of voters cast 51 percent of their votes for Hubert Humphrey in the 1968 presidential election and 3 percent for George Wallace. The logit equation would then predict that with probability 61 percent such a district would have elected a Democratic congressman in 1970, and that, other things being equal, the redistricting which made the district more Democratic increased to 66 percent the probability that the district would elect a Democratic congressman. By aggregating across all districts and adjusting for population changes, we can find the expected effect of redistricting on the partisan makeup of Congress.

The constitutional rationale for redistricting is to increase the number of voters in some districts and to reduce the number in others so as to produce approximate population equality across districts. Any analysis must take into account such population shifts. For example, if a given party has much of its strength concentrated in districts which lost population, then just maintaining its seat share may require skillful gerrymandering whose effects will be lost sight of if we simply compare the number of representatives from that party before and after reapportionment. We account for population changes by weighting each 1970 estimate by the ratio of the population in the district to the ideal size district in that state; that is, we give a party credit only for the equivalent of these seats that could legitimately, on one-person-one-vote grounds, have carried through into the postdecennial census reapportionment in which a new ideal district size would be established. Had we failed to make this adjustment, we would have overstated the prereapportionment strength of that party (usually the Democrats) whose seats were, on average, underpopulated relative to the new norm. (A similar form of adjustment is carried out by Born, 1985, p. 313, but not by most other authors.)

Our logit model does rather well in terms of aggregate predictive accuracy in 1970. A likelihood ratio test shows the prediction equations are significant at better than the 1 percent level; the *t*-statistics are as follows:

	Humphrey Vote	Wallace Vote
North	8.69	4.50
South	3.57	4.20

Moreover, even on the district-by-district level, the model fits quite well.

If at the national level, the 1970s redistricting had no partisan consequences, then the (logit-derived) expected number of districts won by Democrats in 1970 should be essentially identical to that in 1972. We can simply sum up the victory probabilities given by our model to develop an "expected" seat prediction. In 1970 we predicted an expected 237.35 seats to be won by Democrats (the actual number was 239). In the new 1972 districts we predicted 241.63 seats to be won by Democrats (the actual number was 235). Of course, in both years we used the same equations to predict expected seats. We obtain a change in predicted seats from 1970 to 1972 of only 4.28 (see Table 2). Thus, while we cannot rule out the possibility that the 1971-72 congressional redistricting had, at the national level, a pro-Democratic effect, the effect is minimal, and the difference is not statistically significant.⁸

We now turn to a test at the national level of whether redistricting in the 1970s had much effect on incumbents. If redistricting had little effect, we should find that the number of incumbents whose districts were redrawn in their favor (as determined by our logit-derived estimates) is about the same as the number of incumbents who saw their districts redrawn unfavorably. This hypothesis is supported by the data. Treating logit-derived changes in election probability of less than .02 as no change, we find no statistically significant difference between the number of incumbents helped and the number of incumbents hurt, although the direction of the shift is consonant with a proincumbency effect. Moreover, when we control for party, we find that as high a

⁸The difference, however, is in the direction we would expect, since Democrats controlled more than twice as many state legislatures during the 1970s reapportionment as did Republicans. Note also that almost all Democratic incumbents were reelected in 1972 despite the McGovern debacle. Redistricting helped them have new districts which were as "good" (in partisan terms) as their old districts. It cannot account for the ability of Democratic incumbents to win reelection in a year in which the presidential candidate was going down to dismal defeat. Since we are predicting results based on 1968 election strength, the actual Democratic voting strength in 1972 is, of course, irrelevant.

TABLE 2
State by State Pre- and Post-Reapportionment Logit-Estimated Democratic Congressional Seats, 1970-72

State	Partisan Control	Pre-Reapp. (Weighted by Pop.)	Post-Reapp.	State	Partisan Control	Pre-Reapp. (Weighted by Pop.)	Post-Reapp.
Non-South				South			
Arizona	R	.74	.76	Alabama	D	6.47	6.61
California		20.87 (18.44)	22.22	Arkansas	D	3.27	3.31
Colorado	R	1.43	1.82	Florida	D	9.29 (7.43)	9.61
Connecticut		3.92	3.89	Georgia	D	8.06	7.94
Idaho		.59	.60	Kentucky	D	4.55	4.54
Illinois		10.53	10.47	Louisiana	D	7.22	7.24
Indiana	R	3.84	3.81	Mississippi	D	4.79	4.79
Iowa	R	1.66 (1.94)	1.70	North Carolina	D	7.07	6.99
Kansas		.93	.95	South Carolina	D	4.15	4.13
Maryland	D	5.08	5.14	Tennessee		5.31 (5.97)	5.26
Massachusetts		11.16	11.22	Texas		17.79 (17.05)	17.93
Michigan		11.13	11.10	Virginia		6.00	5.98
Minnesota		5.93	5.65				
Missouri	D	5.52	5.73				
Montana		.72	.72				
Nebraska		.36	.36				
New Hampshire	R	.58	.58				
New Jersey		8.02	8.05				
New Mexico	D	.57	.57				
New York	R	19.94 (20.96)	21.53				
Ohio		12.02 (12.54)	11.91				
Oklahoma	D	2.66	2.70				
Oregon		1.52	1.57				
Pennsylvania	D	13.85 (14.96)	14.12				
Rhode Island		1.93	1.93				
South Dakota	D	.48	.49				
Utah		.30	.32				
West Virginia		2.98 (3.73)	3.11				
Wisconsin		4.12 (4.58)	4.33				

NOTE: Numbers in parentheses are based on the state's prereapportionment districts; numbers outside parentheses are based on the number of postreapportionment districts. The latter are the numbers actually used in the text for pre- and post-reapportionment comparisons.

proportion of Republican incumbents were helped by redistricting as were Democratic incumbents (54/99 vs. 52/99). See Table 3.

In a separate analysis (table omitted), we were also able to reject the hypothesis that members of Congress with recent service in their state legislatures (1962 or later) were especially likely to be given districts which favor them. Of the 83 recent former state legislators who won in 1972, 20 were helped by 1972 redistricting, 20 were hurt, and 43 were in districts that were essentially unchanged. In the next section we shall also compare the effects of redistricting on incumbents belonging to the party in control of redistricting with effects on incumbents from the state's minority party; we shall also look at newly created open seats. However, as of this point in the analysis, Hypothesis 3, that redistricting has little or no effect, is overwhelmingly supported over Hypotheses 1 and 2, that posit partisan or proincumbent gerrymanders.

TABLE 3

State by State Pre- and Post-Reapportionment Shifts for Democratic and Republican Incumbents, 1970-72

State	Partisan Control	Dem. Incumbent Helped ^a	Hurt ^a	Rep. Incumbent Helped ^a	Hurt ^a
Alabama	D	0	0	1	0
Arizona	R	0	1	1	1
Arkansas	D	1	0	1	0
California		1	5	8	5
Colorado	R	1	0	1	1
Connecticut		1	0	0	1
Delaware		—	—	—	—
Florida	D	3	3	2	1
Georgia	D	0	3	1	1
Idaho		—	—	—	—
Illinois		3	4	4	3
Indiana	R	2	1	3	2
Iowa	R	0	0	0	3
Kansas		1	0	1	0
Kentucky	D	—	—	—	—
Louisiana	D	—	—	—	—
Maryland	D	1	2	0	0
Massachusetts		—	—	—	—
Michigan		0	2	5	4
Minnesota		1	0	5	4

TABLE 3—continued

State	Partisan Control	Dem. Incumbent Helped ^a	Hurt ^a	Rep. Incumbent Helped ^a	Hurt ^a
Mississippi	D	—	—	—	—
Missouri	D	2	4	0	0
Montana		—	—	—	—
Nebraska		0	0	1	0
Nevada		—	—	—	—
New Hampshire	R	—	—	—	—
New Jersey		5	1	2	2
New Mexico	D	0	0	1	0
New York	R	8	2	4	6
North Carolina	D	1	1	1	0
North Dakota		—	—	—	—
Ohio		1	3	5	4
Oklahoma	D	1	0	—	—
Oregon		1	0	1	0
Pennsylvania	D	0	4	3	2
Rhode Island	D	—	—	—	—
South Carolina	D	0	1	0	1
South Dakota		0	0	0	0
Tennessee		1	2	0	2
Texas	D	1	5	2	1
Utah		—	—	—	—
Vermont		—	—	—	—
Virginia		3	0	4	1
West Virginia		2	3	0	0
Wisconsin		1	1	1	4
Total		42	48	58	49

NOTE: ^aReelection probability shift > .02 for or against incumbent.**Cui Bono: State by State**

Although at the national level we find little evidence of a partisan or bipartisan gerrymander in the 1970s, it might still be the case that there are partisan effects in particular states but that they cancel out on the national level. For example, California's pro-Democratic congressional gerrymander in 1982 was alleged to have been driven by a need to "compensate" for the earlier pro-Republican gerrymander in Indiana.

We have data on 41 of the 42 states which underwent reapportionment in 1971 or 1972. The estimated distribution of seats by party is

shown in Table 2. It is obvious that, by our measure, the only states which show a partisan gerrymander are California, Pennsylvania, New York, and Florida (the latter two only minimally). The null hypothesis of no effect should (except where noted above) be accepted. In the four states where partisan effects are found, the changes were in the expected direction (the California plan was that of the Democratic controlled legislature, implemented by a state court as a temporary expedient).⁹ The four states with nontrivial partisan effects share one important characteristic: they are the only states to experience a shift in the size of their congressional delegation of at least two seats (California: +5, Florida: +3, New York: -2, Pennsylvania: -2). This suggests that only when population shifts force changes (and there is clear partisan control) will major departures from the existing partisan balance take place (cf. Cain and Campagna, 1984).

We also do not find support for the hypothesis that there exists a partisan gerrymander that favors incumbents. That is, we do not find that, in the 22 states where the redistricting process is such that one party controls both houses of the legislature and also controls the governorship, incumbents whose party is in power were more likely to be given favorably redrawn districts. In only two states did redistricting favor, on balance, the incumbents of the party controlling the states. Incumbents of the controlling party were hurt in 12 states, and there were no net benefits for either party's incumbents in the remaining eight states (see Table 3). Of the 16 states controlled by Democrats, only in Oklahoma was a net advantage given to Democrat incumbents (and that just a net +1); in nine states, Democratic incumbents were at a net disadvantage; and in the remaining six there was no net advantage to either party. In four of the nine states under Republican control, Republican incumbents got no advantage, and in three of those nine states Republican incumbents were disadvantaged. Moreover, we do not find that in the 19 states with divided control and/or a court-ordered plan was a higher proportion of incumbents helped than in the 22 states with partisan control. In the divided states, 66 of 127 incumbents (52 percent) were helped, and 61 of 127 (48 percent) were hurt. In states with partisan control of the legislature, 42 of 88 incumbents (48 percent) were

⁹Of the 22 states which redistricted for 1972 and were under clear single-party control, 16 were under Democratic control. Of these 16, nine became more favorable to Democratic election chances after reapportionment, five stayed the same, and two became less favorable. Of the six states under Republican control, two became more favorable to Republican election chances after reapportionment, and four became less favorable. However, except for the four states noted in the text, reapportionment effects are trivial in magnitude.

hurt by redistricting, and 46 of 88 incumbents (52 percent) were helped. In short, redistricting plans drawn by partisan majorities and those drawn without such a clear potential partisan imperative do not look different in their treatment of incumbents.

Our estimates of expected gains or losses from redistricting, based as they are on a logit equation, are in terms of percentage point changes in probability of winning election. Thus, even major shifts in expected votes would not have shown as having any real impact unless they significantly changed the chances of electoral success. By focusing on changes in the probability of electoral success rather than on changes in expected votes, we avoid the error of treating a 10 percent decrease in partisan strength in a district where votes are 80 percent for one party the same as a 10 percent increase in partisan strength added to a potentially competitive district. In our approach a 1 percent change in election success is the same if we move from 99 percent to 98 percent probability of victory or from 50 percent to 49 percent. Admittedly, however, incumbents in competitive seats may be more sensitive to small changes than those who are already overwhelmingly safe. However, even if we look at changes in competitive seats only (expected probability of victory is between 45 percent and 55 percent), the conclusion that no partisan effects could be found except in a handful of states remains unchanged. We identified 28 competitive seats which shifted. Only in California, where six of seven districts shifted to become more Democratic (with four of the six outside the competitive range), and with one seat shifting from competitive to overwhelmingly Republican, was there any substantial partisan effect on competitive seats. Excluding California, we find that six previously competitive seats shifted out of the competitive range so as to benefit Democrats and that four previously competitive seats shifted out of the competitive range so as to benefit Republicans. In only one state, Missouri, did these shifts involve more than one seat, and in that state the partisan changes were evenly balanced.

So far our tests (like those in most earlier research) have been limited in their focus on incumbents who run for office and/or on the statewide shifts in expected seats based on the partisan composition of districts; they fail to take into account incumbent displacement. As Cain (1985a) and others (e.g., Grofman, 1983) have pointed out, because incumbents have such an enhanced ability to win a given seat, the party in control of redistricting can benefit from redistricting by removing incumbents of the other party (by combining two or more incumbents into one district, by collapsing the seats of already retiring incumbents, or by creating districts in which the serving incumbent will not wish to run) even if, in the aggregate, there has been no change

in the overall distribution of partisan voting strength across districts. For example, partisan advantage can sometimes be assured simply by combining the district of a retiring incumbent with that of a sitting incumbent and packing the district. Also, if a state has gained seats, partisan advantage may be achieved easily by leaving existing incumbents untouched and simply assuring control of new seats. If we look only at the fate of incumbents running for office, these methods show up as bipartisan gerrymandering, even though each is actually a key tool in sophisticated partisan gerrymandering (Cain, 1984, 1985a; Bullock, 1982; and Grofman, 1983).

To test for an incumbent displacement effect, we shall first determine the states in which incumbents were placed in the same district (see Table 4). We see that pairing of incumbents was not more common in states under partisan control than in states not under partisan control and that

TABLE 4
States where Incumbents Were Electorally Paired in 1972 Redistricting

State	Partisan Control	Seat Gain or Loss in That State	Party of Incumbents ^a	Party of Victor
Alabama	D	-1	D	D
California	court ^b	+5	D	D
Illinois	court ^c	0	D (2 seats)	D, D
Iowa	R	-1	D, R	D
Maryland	D	0	D	D
Michigan	court ^d	0	R	R
North Dakota	divided	-1	R	R
New Jersey	court	0	D	D
New York	R	-2	D (2 seats)	D, D
Pennsylvania	D	-2	D (1 seat) R (1 seat)	D R
Tennessee	divided	-1	D	D
West Virginia	divided	-1	D (1 seat)	D
Wisconsin	divided	-1	D, R	D

NOTES: ^aOne of the paired incumbents may have already been retiring or decided subsequently to retire.

^bPlan used by court was that of Democratic-controlled legislature.

^cThe court plan thought to favor Republicans (see note 13).

^dFive Republican incumbents ran in districts other than where their homes were; only two incumbents electorally paired.

only the Republicans in New York appear to have used incumbent displacement as a partisan gerrymandering technique. Because incumbent displacement effects will be completely lost in the usual analyses of gerrymandering, including seats-votes analysis, we believe it very important to examine the data carefully to see if such boundary manipulations took place (cf. Grofman, 1982a).

In the 1972 redistricting, nine retiring incumbents had their homes in districts that were won by the opposing party. However, of these nine seats which changed hands after the retirement of an incumbent, three had been made more safe for the party of the incumbent and three less safe. Thus, while a significant proportion of all seat changes occurs in seats with a retiring incumbent, it appears that these seats change hands because of the incumbency advantage and not because of shifts in the partisan makeup of the districts themselves. This provides further evidence for the absence of partisan use of incumbency displacement as a gerrymandering tool in 1972 redistricting.¹⁰

The only clear result from Table 4 is that courts are less sensitive to incumbent protection than are legislatures: four of the six court plans put incumbents together (in all four cases in states where there had been no seat loss), while in only three of the 35 noncourt plans were more incumbents put together than was required by the loss of congressional seats. However, even court-drawn plans affect the reelection chances of no more than one or two incumbents in a state. Of course, as Schwab (1985, p. 156) reminds us, "Since so few incumbents lose, the outcome of elections in a small portion of the total will determine the size of a party's gain or loss. Therefore, just focussing on the proportion of the defeats affected by redistricting in relationship to the total number of races minimizes the impact of redistricting."

As noted previously, except for seats made open because of an incumbent retirement or relocation, we have not considered what happened in the open seats in the 41 states we studied. Clearly, such open seats could only exist in states which had gained from redistricting. These states are Arizona (+1), California (+5), Colorado (+1), Florida (+3), and Texas (+1), for a total of 11 seats. Of the open seats, eight of the 11 were won by the party in control of the redistricting (treating California's court-imposed legislative plan as Democratic in inspiration). However, in the nonopen seats in these states, 54 of 80 were won

¹⁰The 1980 partisan gerrymander in California achieved its effect not so much by manipulating the partisan composition of districts as by reducing the incumbency advantages possessed by the opposing party (Cain, 1985b; Grofman, 1983). However, even in the 1980s there is evidence for this tactic in, at most, a handful of states (Richard Morrill, personal communication, May 1985).

by the party in control of the redistricting process. The difference between 67.5 percent (54/80) and 72.7 percent (8/11) is not significant. Thus, no special partisan manipulation of the open seats appears to be taking place. If we exclude California, where two Republicans and three Democrats won open seats, we find that five of six open seats went in the direction predicted by partisan control. Since Arizona, Florida, and Texas were at the time lopsidedly one-party states, we do not find gains in these states for the majority party which could not be accounted for by party voting strength alone. In Colorado, however, an argument can be made that Republicans picked up a seat that they might not otherwise have won had Democrats been in control of redistricting.

Discussion and Conclusions

We have looked for partisan gerrymandering with a fine-tooth comb, but only in California and New York (and to a much lesser extent in Pennsylvania, Florida, and perhaps Colorado) do we find any evidence of it. The change in partisan makeup of the House in 1972 due to reapportionment is at most a handful of seats.¹¹ As for bipartisan gerrymandering, we find that legislatures (and even courts) leave incumbents virtually untouched in their reelection chances (as judged by comparisons of the partisan composition of new and old districts). Only where major population shifts compelled rearrangements of existing lines were incumbents substantially affected by 1972 redistricting. Thus, we found neither the partisan gerrymandering expected by the journalists, nor the bipartisan gerrymandering (at least of a form that benefits incumbents over their previous situation) that some political scientists believe exists. Why?

¹¹ The classic partisan gerrymander wastes the opposing party's vote by packing it in districts which will be won overwhelmingly, submerges the opposing party's remaining voters, and maximizes the controlling party's own voting strength by creating as many districts as possible which are marginal, but in which it has the edge. The effect of a partisan gerrymander is to shift the location of the median voter in the median district, by creating a discrepancy between the median and the mean on the statewide district-level distribution of partisan voting strength (Owen and Grofman, forthcoming 1988). If we characterize voters in each congressional district in terms of a left-right ideological continuum, shifts in the location of the median votes in some districts will need to be compensated for a corresponding shift of the median voters in other districts in the opposite direction. If the distribution of ideological attitudes is normally distributed in each district, then those results will largely cancel out, at least to the extent that candidates in each district simply track the median voter in that district (Downs, 1957; Glazer and Robbins, 1985). However, if the ideological distribution is bimodal and related to party affiliation, then changes in the distribution of the medians of districts, by shifting party control, can have major policy consequences.

We have several explanations for maintenance of the status quo. Redistricting does not take place *de novo*. The existing district lines and (even more important) the incumbents who are in them are a critical factor in shaping the new plans. We do not expect the classic partisan gerrymander to exist in a world with electoral uncertainty, in which the spatial distribution of partisan voting strength constrains gerrymandering possibilities, and in which previous district lines structure reapportionment decision making in a crucial way. The desire of incumbents of the majority party in a state to safeguard their own reelection leads them to prefer plans which have as a side effect the preservation/creation of a large number of safe districts for members of the opposite party.¹² Safe districts for party 2 occur if making a party 1 district more safe requires taking party 1 voters from some adjacent district and moving them into the district, or removing "excess" party 2 voters if the district is too large. In the latter case the party 2 voters have to go somewhere, and no party 1 incumbent will want them in his/her district, so there is a good chance they will end up in the district of a party 2 incumbent. In the former case the party 1 voters have to come from somewhere, and no party 1 incumbent will want to give them up. So they, too, insofar as possible, will come from a district occupied by a party 2 incumbent who will be happy to see them go. In sum, without an enforced party discipline which looks to the aggregate good of the party, the self-interest of individual legislators will by and large lead them to favor the status quo or to favor what looks like bipartisan gerrymandering, even though it is being done for partisan purposes (cf. Cain, 1984; Born, 1985, pp. 306-07).

There are four other important reasons why redistricting plans in the 1970s (or 1960s or 1980s) did not resemble the classic prescription for optimal partisan gerrymandering: "pack your opponent's voters into a handful of districts and win the remaining districts by bare margins." First, in 1972, 21 states had legislatures with divided control in which no single party controlled the governorship and both branches of the

¹²In the 10 states with clear partisan control, Noragon (1973, pp. 324-26) finds that competitiveness declined, with some evidence that both majority and minority party seats were made safer. In five states where a bipartisan gerrymander would be expected, Noragon (pp. 326-27) finds that the number of districts switching party control was low and that there was little change in district competitiveness because most of the districts were already quite safe to begin with and merely remained that way. Although Noragon (1973, pp. 322-23) also finds that, overall, there was a higher proportion of noncompetitive seats after reapportionment than before, as Ferejohn's (1977, p. 168) reanalysis of election data from this period shows, the decline in competitive seats also occurred in states which did not redistrict, suggesting a time trend of incumbency advantage unconnected with reapportionment (cf. Mayhew, 1971; Tufte, 1973).

legislature.¹³ (The number of states with divided control was similar in other recent decades.) Divided control means that only plans which do not rock the status quo are likely to get the necessary consensus, while failure to reach agreement puts things in the lap of the courts, which frequently make use of "least-changed" plans satisfying equal population constraints (see Table 1).¹⁴

Second, even in states with undivided control, court-ordered plans may arise because the legislature fails to act or because of a finding of unconstitutionality. This occurred in 1972 in Missouri.¹⁵

Third, the one-person-one-vote decisions, especially when combined with other court-enforced constraints such as compactness, contiguity, and avoidance of racial dilution, may somewhat hinder gerrymandering efforts, although we believe the effect of these factors in 1970s redistricting was at best slight¹⁶ (cf. Born, 1985, pp. 306-07, 313).

¹³We include Nebraska's nonpartisan legislature in this category.

¹⁴This occurred in Connecticut and Washington in 1972. Even when court-ordered plans do not cause pure incumbency preservation, they may still do so to a great degree, e.g., California, 1971, 1973 (for 1974); Illinois, 1972; New Jersey, 1972. The Illinois Federal Court is sometimes accused of designing a pro-Republican plan in 1971, but the pairing of Democratic incumbents in their plan can, we think, be accounted for simply by loss of population in Chicago.

¹⁵In 1972 (for 1973) it occurred in Texas.

¹⁶It is our view that the one-person-one-vote ruling of the U.S. Supreme Court had the effect of dramatically increasing the potential for one kind of intentional gerrymandering, manipulation of district boundaries, while eliminating the possibility of another kind of gerrymandering, the use of unit voting and other territory-based rather than population-based rules for apportionment. We believe the net consequences of these two opposing effects is that gerrymandering may now be marginally easier because of the reduced importance given in recent cases to factors such as preserving county boundaries.

The equipopulation requirement alone does not constrain gerrymandering. By manipulating a few precincts, plans can be made as close to zero population deviation as required, and scores of plans can be created which satisfy equipopulation guidelines but which vary dramatically in their partisan or incumbent-preserving consequences. Indeed, to the extent the courts reviewing plans view equal population as the chief or only criterion relevant to a determination of whether or not a plan is constitutional, it gives those drawing districting plans a license for gerrymandering (see Justice Stevens's opinion in *Karcher v. Daggett*, 1983).

Beginning in the mid-1970s, reapportionment in jurisdictions covered by the section 5 preclearance provisions of the Voting Rights Act came under very close Justice Department scrutiny. Because of the requirement that there could be no retrogression in minority voting strength, districts with substantial black and Hispanic population had to be kept intact. With these districts fixed, maintenance of a least-changed plan became more likely. However, very recent cases brought under the new (1982) language of section 2 of the Voting Rights Act (e.g., *Major v. Treen*, D.C. Louisiana, 1983) have imposed requirements for minority representation considerably more stringent than the nonretrogression test (Grofman, Migalski, and Noviello, 1985).

Fourth, even if we neglect the motivations of individual legislators, in a world of electoral uncertainty where parties look to long-run advantage, it may not be desirable to create marginal districts, lest the electoral tides totally undo what has been so carefully (but fragilely) wrought (cf. Scarrow, 1982). In particular Owen and Grofman (forthcoming 1988) show that a party that wishes to either maximize its long-run expected plurality in the legislature or to maximize the probability that it will be in majority control will favor a gerrymander that looks a lot like a bipartisan gerrymander, even though it is quite differently motivated. Only in treatments of open seats (if any) and in the partisan use of incumbent displacement would we be able to distinguish between the "safe-seat" districtings done with partisan as opposed to bipartisan aim.

Finally, the most important reason we do not observe more proincumbent gerrymandering is that no incumbents regard themselves as ever safe enough. It can be dangerous, however, to be "too safe" because one might face primary opposition, even though the general election is a cinch. For example, Grofman and Migalski (1985, Table 3) show that for California congressmen in 1960–84 the probability that a seat loss would come through primary defeat was twice as high in the least competitive seats as in the most competitive ones. Also, incumbents often want to keep the territory they have, even if offered territory which is as good or even better in partisan terms (Cain, 1984). Sometimes this is because of the location of particular landmarks; for example, in the 1980s a Chicago alderman protested that his new district had been deprived of a block with no population which contained a supermarket which he had helped entice into the neighborhood as an agent of urban revitalization. More generally, incumbents may desire to retain their old seats intact, with the familiar territory and known pitfalls that have hitherto been avoided and with campaign workers and sources of campaign funding already in place. These phenomena lead to a strong bias for plans which preserve existing districts except to the extent necessary to comply with equal population guidelines. Very real geographic constraints on the geographical clustering of party voters further limit the possibility of partisan gerrymandering.¹⁷ Voters cannot be moved from

¹⁷Grofman and Noviello (1984) have simulated the outcomes of single-member district elections in a 100-seat legislature in which spatial clustering is varied by adjusting the probability that two adjacent voting precincts of unit voting strength will be won by the majority party, while the overall voting strength of the majority party is held constant. They have looked at the simultaneous interaction of partisan voting strength and spatial clustering, with voting strength of the majority party varied from .5 to .8 and the spatial clustering parameter allowed to range from .5 to .9 (also see Gudgin and Taylor, 1979; Wildgen and Engstrom, 1980; Owen and Grofman, 1982).

where they are to a district where they will do their party more good. Furthermore, to the extent that the old plan already represents an earlier attempt at gerrymandering by a party that is still in control, it may not be feasible to deviate much from it, except where population shifts have occurred or incumbents have retired.

In sum, if we wish to account for congressional incumbent success in the 1970s, we cannot attribute it to their having new districts which were more advantageous for them than their old districts.

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REFERENCES

- Auerbach, Carl A. 1964. The reapportionment cases: One person, one vote—one vote, one value. In Philip Kurland, ed., *Supreme Court review*. Chicago: University of Chicago Press.
- . 1982. Comments on criteria for single-member districting. In Bernard Grofman, Arend Lijphart, Robert McKay, and Howard Scarrow, eds., *Representation and redistricting issues*. Lexington, MA: Lexington Books, Heath.
- Axelrod, Robert. 1972. *Conflict of interest: A theory of divergent goals with applications to politics*. Chicago: Markham.
- Ayres, Q. Whitfield, and David Whiteman. 1984. Congressional reapportionment in the 1980s: Types and determinants of policy outcomes. *Political Science Quarterly*, 99:303–14.
- Backstrom, Charles H. 1982. Problems of implementing redistricting. In Bernard Grofman, Arend Lijphart, Robert McKay, and Howard Scarrow, eds., *Representation and redistricting issues*. Lexington, MA: Lexington Books, Heath.
- Backstrom, Charles, Leonard Robins, and Scott Eller. 1978. Issues in gerrymandering: An exploratory measure of partisan gerrymandering applied to Minnesota. *Minnesota Law Review*, 62:1121–59.
- Baker, Gordon E. 1955. *Rural versus urban political power*. New York: Random House.
- . 1966. *The reapportionment revolution*. New York: Random House.
- Bicker, William E. 1971. The effects of malapportionment in the states: A mistrial. In Nelson W. Polsby, ed., *Reapportionment in the 1970s*. Berkeley: University of California Press.
- Billingsley, Keith R., and Delmer D. Dunn. 1974. The states and the Bureau of the Census. *State Government*, 47:180–84.
- Born, Richard. 1985. Partisan intentions and election day realities in the congressional redistricting process. *American Political Science Review*, 79:305–19.
- Bullock, Charles S., III. 1975. Redistricting and congressional stability, 1962–72. *Journal of Politics*, 37:569–75.
- . 1982. The inexact science of congressional redistricting. *PS*, 15:431–38.
- Cain, Bruce E. 1984. *The reapportionment puzzle*. Berkeley: University of California Press.
- . 1985a. Assessing the partisan effects of redistricting. *American Political Science Review*, 79:320–33.

- . 1985b. Prepared testimony (1983) in *Badham v. Eu*, U.S. District Court for the Northern District of California; excerpted in *PS*, 18:561–67.
- Cain, Bruce E., and Janet C. Campagna. 1984. Predicting partisan congressional redistricting plans: The “Jupiter” effect. Presented at the annual meeting of the American Political Science Association, Washington, DC.
- Dahl, Robert. 1956. *A preface to democratic theory*. Chicago: University of Chicago Press.
- Downs, Anthony. 1957. *An economic theory of democracy*. New York: Harper and Row.
- Erikson, Robert, and Gerald Wright. 1980. Policy representation of constituency interests. *Political Behavior*, 2:91–106.
- Ferejohn, John A. 1977. On the decline of competition in congressional elections. *American Political Science Review*, 71:166–76.
- Glazer, Amihai, and Marc Robbins. 1985. Congressional responsiveness to constituency change. *American Journal of Political Science*, 29:259–73.
- Gopoian, J. David, and Darrell M. West. 1984. Trading security for seats: Strategic considerations in the redistricting process. *Journal of Politics*, 46:1080–96.
- Grofman, Bernard. 1982a. Reformers, politicians, and the courts: A preliminary look at U.S. redistricting in the 1980s. *Political Geography Quarterly*, 1:303–16.
- . 1982b. For single-member districts random is not equal. In Bernard Grofman, Arend Lijphart, Robert McKay, and Howard Scarrow, eds., *Representation and redistricting issues*. Lexington, MA: Lexington Books, Heath.
- . 1985a. Criteria for districting: A social science perspective. *UCLA Law Review*, 33:77–184.
- . 1985b. Report on prima facie evidence for partisan gerrymandering in California congressional districting. Prepared testimony in *Badham v. Eu*, U.S. District Court for the Northern District of California; excerpted in *PS*, 18:576–81.
- . 1985c. Introduction to minisymposium: Political gerrymandering: *Badham v. Eu*, Political Science Goes to Court. *PS*, 18:538–43.
- Grofman, Bernard, and Michael Migalski. 1985. A Markov chain model for electoral competition. Typescript, University of California, Irvine.
- Grofman, Bernard, Michael Migalski, and Nicholas Noviello. 1985. The totality of circumstances test in section 2 of the voting rights act: A social science perspective. *Law and Policy*, 7:199–223.
- Grofman, Bernard, and Nicholas Noviello. 1984. Spatial constraints on partisan gerrymandering. Typescript, University of California, Irvine.
- Grofman, Bernard, and Howard Scarrow. 1982. Current issues in reapportionment. *Law and Policy Quarterly*, 4:435–74.
- Gudgin, Graham, and Peter J. Taylor. 1979. *Seats, votes and the spatial organization of elections*. London: Pion.
- Lehne, Richard C. 1971. Representation in Congress: A projection for 1972. *National Civic Review*, 60:372–76.
- Mayhew, David R. 1971. Congressional representation: Theory and practice in drawing the districts. In Nelson W. Polsby, ed., *Reapportionment in the 1970s*. Berkeley: University of California Press.
- Niemi, Richard G. 1985. The swing ratio: An explanation and assessment of alternative measurements. Presented at the annual meeting of the Public Choice Society, New Orleans.
- Noragon, Jack L. 1973. Redistricting, political outcomes, and gerrymandering in the 1960s. *Annals of New York Academy of Sciences*, 219:314–34.
- O’Loughlin, John. 1982a. The identification and evaluation of racial gerrymandering. *Annals of the Association of American Geographers*, 72:165–84.

- . 1982b. Racial gerrymandering: Its potential impact on black politics. In Michael B. Preston, Lenneal J. Henderson, Jr., and Paul Puryear, eds., *The new black politics*. New York: Longman.
- Owen, Guillermo, and Bernard Grofman. 1982. Collective representation and the seats-votes swing relationship. Presented at the annual meeting of the American Association of Geographers, San Antonio.
- . Forthcoming. Optimal partisan gerrymandering. *Political Geography Quarterly*.
- Scarrow, Howard. 1982. Partisan gerrymandering—invidious or benevolent? *Gaffney v. Cummings* and its aftermath. *Journal of Politics*, 44:810–21.
- Schwab, Larry M. 1985. The impact of 1980 reapportionment in the United States. *Political Geography Quarterly*, 4:141–58.
- Sickels, Robert J. 1966. Dragons, bacon strips, and dumbbells: Who's afraid of reapportionment. *Yale Law Journal*, 75:1300–06.
- Tufte, Edward R. 1973. The relationship between seats and votes in two-party systems. *American Political Science Review*, 67:540–47.
- Wildgen, John K., and Richard L. Engstrom. 1980. Spatial distribution of partisan support and the seats/votes relationship. *Legislative Studies Quarterly*, 5:423–35.