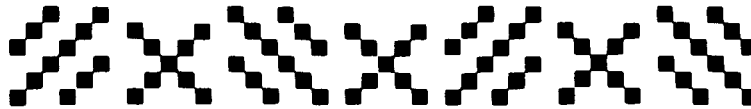# Numbers, Science, and History:
A Review Essay of *The Indiana Voter*

Michael Les Benedict*

The Indiana Voter: The Historical Dynamics of Party Allegience During the 1870s. By Melvyn Hammarberg. (Chicago: The University of Chicago Press, 1977. Pp. xi, 251. Figures, tables, appendixes, notes, bibliography, index. $17.50.)

In the late nineteenth century, historians—inspired by the scientific ideal as were intellectuals throughout the western world—determined to apply scientific method to learning about the past. With the confidence exemplified by John B. Bury's trenchant insistence that "history is a science, no less and no more," they aspired to describe history *wie es eigentlich gewesen ist*, as it actually was.[1] Both the first generation of "scientific historians" and the "new historians" who followed them insisted that they would approach their subjects without preconceived notions; their interpretations were to be compelled by the facts. Optimistically some tried to collect and interpret "hard," objective data such as census records and voting statistics that would not be distorted by the biases of the historical observer as they feared would be the case with more conventional, literary sources.[2]

Historians soon found that their aspirations were limited by the material with which they worked. The collection and manipulation by hand of the immense quantities of data contained in the censuses, election returns, and institutional records proved impracticable; statisticians had not yet developed

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[1] John B. Bury, "The Science of History," quoted in Thomas N. Guinsberg, ed., *The Dimensions of History: Readings on the Nature of History and the Problems of Historical Interpretation* (Chicago, 1971), 23-24.

[2] For the best study of the development of the American historical profession, see John Higham, *History: Professional Scholarship in America* (New York, 1973). For a more general discussion of the effect of the growing dominance of scientific method upon turn of the century American scholarship, see Thomas C. Cochran, "The Inner Revolution," in Thomas C. Cochran, *The Inner Revolution: Essays on the Social Sciences in History* (New York, 1964), 1-18.

the tools necessary to extract reliable samples or to draw infer-
ences with confidence. Perhaps more worrisome, the nature of
historical data seemed to preclude truly scientific approaches to
evaluation. Historians could follow the first steps of scientific
procedure—observation and reflection upon relevant data and
formulation of an hypothesis. But testing that hypothesis
through "objective methods, which . . . yield independently veri-
fiable results" seemed impossible.[3] Natural scientists could
create "test tube" conditions permitting reproducible experi-
ments that established with near certainty the probability that
hypotheses were true. Scholars hoping to find laws of human
behavior tried to adopt similar procedures, psychologists prov-
ing particularly adept in doing so. Researchers studying human
political behavior—long the central concern of historians—
demonstrated that one could test survey results (including
those of the largest survey of all, actual elections) against the
results one would expect if an hypothesis were true or false.
Still humanists in the sense that they studied man, these "so-
cial scientists" had an inestimable advantage over their col-
leagues who continued to study the past: they could create their
own data. This historians could not do. They could only absorb
existing information, never absolutely certain that it was reli-
able; draw a conclusion from it; and then explain to their
readers as convincingly as possible why they drew it. The evi-
dence they had to use was the same as that which had led them
to their insight in the first place, augmented by new informa-
tion collected in light of that hypothesis. Walter Prescott Webb
presented an intensely personal glimpse into this process in his
1958 presidential address to the American Historical Associ-
ation. His first original historical insight was "the greatest
creative sensation I have ever known," he said. "It took a year
to gather the proof of what I knew that night."[4]

All successful historians can recall similar magical mo-
ments. ". . . the plunge by which we gain a foothold at another
shore of reality," as Michael Polyani described it, is common to

[3] The wording is from the National Science Foundation's guidelines differ-
entiating "scientific" research, which it will support, from "humanistic" re-
search, which it will not. National Science Foundation, *Thirteenth Annual
Report for the Fiscal Year Ended June 30, 1963* (Washington, 1963), 28-29, quoted
in John Higham, "The Schism in American Scholarship," in John Higham, *Writing
American History: Essays on Modern Scholarship* (Bloomington, Ind., 1970), 8. For
a clear statement of the scientific method, as defined by a leading social scientist,
see Fred N. Kerlinger, *Foundations of Behavioral Research: Educational and Psy-
chological Inquiry* (New York, 1964), 3-17.

[4] Walter Prescott Webb, "History as High Adventure," *American Histori-
cal Review*, LXIV (January, 1959), 270.

both historical and scientific research.[5] For scientists the insight leads to the formation of an hypothesis that is then tested empirically for the probability of truth. When historians research materials in light of an insight, they cannot be certain of their objectivity, no matter how committed they are to abandoning their insight if there is not evidence enough to support it. This dilemma is due to what scientists call "the selection tendency," the human mind's tendency to screen out facts that do not correspond to preconceived notions.[6] The procedure seems to be circular, the "conclusion" merely an untested hypothesis born of the personal reaction of the reseacher to his data. Despairing of "objective" history, where facts would compel proper interpretation, most historians by the 1930s were "relativists," agreeing with Carl L. Becker that "even if you could present all the facts the miserable things wouldn't say anything, would say just nothing at all." Thus, through the medium of the historian, who must interpret facts subjectively, "the past . . . is the product of the present."[7] Generally, historians are still relativists, though no longer so gloomy about accurate portrayal of the past as Becker. In fact, most historians have made a virtue of what scientists would perceive as the weakness of the historical method. Like Lawrence Stone, they speak lovingly of "that feedback process by which . . . hunches are tested by data, and the data in turn generate new hunches."[8] Eschewing "scientific" history, historians still seek objective accuracy through what has been called "critical" history: the use of nonscientific procedures to evaluate the reliability of evidence; dependence upon training to avoid bias, presentism, and historicism; and hostility to efforts to establish historical "laws" or to import the notion of "predictability" into the discipline.[9]

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[5] Michael Polyani, *Personal Knowledge* (Chicago, 1958), 4.

[6] Kerlinger, *Foundations of Behavioral Research*, 5.

[7] Carl L. Becker, "What Are Historical Facts?" *Western Political Quarterly*, VIII (September, 1955), 327-40. This essay was found among Becker's papers and was printed posthumously. For a contemporary, less trenchant statement of Becker's philosophy, see his famous presidential address to the American Historical Association. Carl L. Becker, "Everyman His Own Historian," in Carl L. Becker, *Everyman His Own Historian: Essays on History and Politics* (New York, 1935), 233-55.

[8] Lawrence Stone, "History and the Social Sciences in the Twentieth Century," in Charles F. Delzell, ed., *The Future of History: Essays in the Vanderbilt University Centennial Symposium* (Nashville, 1977), 27. Stone was speaking of "testing" in its loosest sense here. By complaining that the use of computers precludes even the formulation of hypotheses until "the print-out is finally available," he manifested a surprising misunderstanding of the role of data, which must test rather than originate hypotheses.

[9] Harry Elmer Barnes, *A History of Historical Writing* (2nd rev. ed., New York, 1962). Most manuals on historical method fit this description. See, for

Technological developments and advances in statistical measurement techniques since the 1940s have reawakened interest in scientific procedures among historians. Computers now enable scholars to manipulate massive amounts of data. Powerful statistical tools permit precise analysis of relationships between variables. Many historians now call at least for more exact measurement of inherently quantifiable information; many urge the application of sophisticated statistical methods as well. Most encourage colleagues to utilize concepts developed by social scientists where applicable; a few—most persistently Lee Benson—even urge historians finally to adopt all the procedures of science; and the establishment of the *Journal of Interdisciplinary History* and the creation of the Social Science History Association testify to the growing appeal of new methods.[10]

In the United States the impact of these new developments has been greatest in the field of political history. Many American political historians have eschewed study of particular elections, events, or presidential administrations in order to uncover underlying patterns and broader trends of political behavior. Insofar as American political historians have used new tools to challenge predecessors' interpretations, they have approached the methods of the sciences: they have treated these earlier interpretations as hypotheses and have developed research designs for testing them through assessment of quantifiable data by methods that can be reproduced by other inves-

example, Jacques Barzun and Henry P. Graf, *The Modern Researcher* (3rd ed., New York, 1977); Jules R. Benjamin, *A Student's Guide to History* (New York, 1975); Marc Bloch, *The Historian's Craft* (New York, 1953); Henry Steele Commager, *The Nature and Study of History* (Columbus, Ohio, 1965); J. H. Hexter, *Doing History* (Bloomington, Ind., 1971); Walter T. K. Nugent, *Creative History* (2nd ed., Philadelphia, 1973). The eminent philosopher of history, R. G. Collingwood, argued that the historical method embodied a third system of investigation, separate from and just as valid as the philosophical and the scientific modes. R. G. Collingwood, *The Idea of History* (Oxford, 1946).

[10] Lee Benson, *Toward the Scientific Study of History: Selected Essays* (Philadelphia, 1972); Thomas C. Cochran, "Historical Use of the Social Sciences," in Cochran, *The Inner Revolution,* 19-38; Allan G. Bogue, "United States: The 'New' Political History," *Journal of Contemporary History,* III (January, 1968), 5-27; Samuel P. Hays, "The Social Analysis of American Political History, 1880-1920," *Political Science Quarterly,* LXXX (September, 1965), 373-94; Stephan Thernstrom, "The Historian and the Computer," in Edmund A. Bowles, ed., *Computers in Humanistic Research: Readings and Perspectives* (Englewood Cliffs, N.J., 1967). Robert R. Dykstra urges the conceptionalization and testing of explicit models to explain historical development in "Stratification and Community Political Systems," in Allan G. Bogue, ed., *Emerging Theoretical Models in Social and Political History* (Berkeley Hills, 1973), 77-96. The title of this collection itself illustrates Bogue's desire to promote scientific procedures of historical research. See also William O. Aydelotte, "Notes on the Problem of Historical Generalization," in Louis Gottschalk, ed., *Generalization in the Writing of History: A Report of the Committee on Historical Analysis of the Social Science Research Council* (Chicago, 1963), 145-77.

tigators.[11] But in what Richard Hofstadter called "the paradox
of quantification," it has been far easier to demolish old theses
than to establish new ones.[12] In fact, only one major new in-
terpretation of American history has emerged from the appli-
cation of new tools to historical data—that nineteenth century
political divisions paralleled ethnic, religious, and cultural
cleavages.[13]

Melvyn Hammarberg's *The Indiana Voter* is an excellent
example of the so called "new political history." Skilled in the
application of mathematical techniques to historical analysis,
Hammarberg rejects "idiosyncratic treatment" of individual
elections, positing instead a general interpretive model through
which all the elections of the 1870s may be understood. In the
process he assesses the validity of the "ethnocultural" interpre-
tation favored by other "new" political historians and attempts
to point out and correct defects in their methods.

As Hammarberg recognizes, the most serious of these de-
fects is inherent in the data. Unable to draw upon survey data
that characterize the political and social traits of individuals,
the "new" political historians instead have had to draw upon

[11] The pioneering effort was Lee Benson, *The Concept of Jacksonian De-
mocracy: New York As a Test Case* (New York, 1961), which tested Arthur M.
Schlesinger, Jr.'s thesis, promulgated in *The Age of Jackson* (Boston, 1945),
that the issues of the Jacksonian era divided Americans along economic class
lines. In the area of Civil War history Glenn M. Linden has tested and found
wanting the progressive historians' conclusion that the Radical Republicans
represented business interests imposing modern capitalism upon an agrarian
South during Reconstruction. Glenn M. Linden, " 'Radicals' and Economic
Policies: The Senate, 1861-1873," *Journal of Southern History*, XXXII (May,
1966), 189-99; " 'Radicals' and Economic Policies: The House of Representatives,
1861-1873," *Civil War History*, XIII (August, 1970), 51-65. Other scholars have
disproven the thesis that immigrant voters swung from the Democratic to the
Republican party over slavery in the 1850s and in 1860. See the essays in
Frederick C. Luebke, ed., *Ethnic Voters and the Election of Lincoln* (Lincoln,
Neb., 1971). Carl V. Harris has tested and found wanting C. Vann Woodward's
assertion that southern Democrats allied with conservative, northern Republi-
cans on economic issues after 1878 in Carl V. Harris, "Right Fork or Left Fork?
The Section-Party Alignments of Southern Democrats in Congress, 1873-1897,"
Journal of Southern History, XLII (November, 1976), 471-506.

[12] Richard Hofstadter, "History and the Social Sciences," in Fritz Stern, ed.,
Varieties of History (Cleveland, 1956), 359-70. See also Stephan Thernstrom,
"Quantitative Methods in History: Some Notes," in Seymour Martin Lipset and
Richard Hofstadter, eds., *Sociology and History: Methods* (New York, 1968),
64-67.

[13] Benson, *Concept of Jacksonian Democracy*; Ronald P. Formisano, *The
Birth of Mass Political Parties: Michigan, 1827-1861* (Princeton, 1971); Michael
Fitzgibbon Holt, *Forging a Majority: The Formation of the Republican Party in
Pittsburgh, 1848-1869* (New Haven, 1969); Richard Jensen, *The Winning of the
Midwest: Social and Political Conflict, 1888-1896* (Chicago, 1971); Paul Klepp-
ner, *The Cross of Culture: A Social Analysis of Midwestern Politics, 1850-1900*
(New York, 1970); Samuel T. McSeveney, *The Politics of Depression: Political
Behavior in the Northeast, 1893-1896* (New York, 1972).

"aggregate" data. That is, they have had to compare voting patterns and social characteristics of groups of people. For example, finding that the Republican percentage of the vote in counties across a state decreased as the proportion of Catholics increased, these historians have suggested that Catholics voted disproportionately Democratic. However, the conclusion does not necessarily follow from the evidence and is an illustration of what is called the "ecological fallacy." All that the aggregate data really show is that the proportion of Catholics and the Democratic vote in counties were positively associated; in the absence of further evidence there is no compelling reason to exclude the possibility that the presence of large numbers of Catholics impelled Protestants to vote more unitedly Democratic, thus accounting for the Democratic increase. In fact, the proportion of blacks in counties of the Deep South was for years associated positively with Democratic voting, despite the fact that almost no blacks voted.[14] Several of the "new" political historians have tried to correct for the ecological fallacy by studying voting units populated almost entirely by people sharing a particular characteristic, but as critics have pointed out, one cannot tell if these cases represented accurately the behavior of individuals in more heterogeneous environments.[15]

Hammarberg avoids the ecological fallacy by relying heavily on data about individuals derived from nine *People's Guides* to central Indiana counties that in effect constitute rare political and religious surveys of nineteenth century populations. These counties were typical of the Midwest, he argues, and he suggests that his findings are therefore likely to apply to the whole region. Utilizing innovative sampling techniques to correct for biases in the surveys, Hammarberg employs powerful statistical tools to assess the makeup of political parties. In the process he challenges some of the basic components of the ethnocultural model of party structure and competition. Most important, Hammarberg finds that the most salient cleavage in the Indiana electorate separated urban voters—by that he means residents of small towns and even hamlets—from rural voters. Urban voters of every social description were more likely to identify themselves as Republicans than were their bucolic counterparts—almost 70 percent of the townspeople did

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[14] V. O. Key, Jr., *Southern Politics in State and Nation* (New York, 1949), 5-11, 318-44.

[15] James E. Wright, "The Ethnocultural Model of Voting: A Behavioral and Historical Critique," in Bogue, *Emerging Theoretical Models,* 35-56; J. Morgan Kousser, "The 'New Political History': A Methodological Critique," *Reviews in American History,* IV (March, 1976), 1-13.

so, while rural folk divided almost evenly. Only Quakers were uniformly partisan (as Republicans) whether in town or countryside. Within towns the foreign born differed radically from natives in their political predilections. Among the native born the rate of Republican identification of a few groups differed marginally from the rest, but these differences had little impact upon the whole picture. Among the farmers and farm workers only Methodists stood out as significantly more likely to affirm Republicanism, while farm laborers, Roman Catholics, and Lutherans tended to be more solidly Democratic than the rest of the population. Again variations among other groups added little to the basic pattern.

Having attended to the underlying patterns of party allegience, Hammarberg turns to the dynamics of the actual elections of the 1870s, assessing to what degree and why specific election results differed from the underlying partisan division. To do this Hammarberg first estimates the underlying partisan divisions by averaging the Republican and Democratic proportion of the vote in each Indiana county over several elections preceding the ones to be studied. Checking these averages against the proportion of Democrats and Republicans as identified in the nine counties covered by the *People's Guides,* Hammarberg is satisfied that this averaging procedure provides an accurate estimate of the long term party identification of the electorate. Through regression analysis he then assesses what proportion of each election result was associated with the basic partisan division in the electorate and what proportion was associated with other variables specific to the individual election. Ultimately, he finds that by far the largest amount of variation in each election was explained by the underlying party division, with the differences between that division and actual results attributable to small but critical changes in turnout, third party (Greenback) appeal, and the association between different social groups and the parties.

Hammarberg's analysis modifies the conclusions of the "new" political historians in some important respects and challenges them in others. First, while he too finds significant differences in the voting patterns of foreign and native born electors, he points out that immigrants made up less than 10 percent of the voting population. Thus the Democrats, who got the larger proportion of the immigrant vote, still had to rely upon native Americans for the largest portion of their support, just as did the Republicans. Likewise, only half the people listed in the *People's Guides* identified with any religious denomination, and half of those who did listed themselves merely

as "Protestant" and nothing more. Thus over 50 percent of the central Indiana electorate could not fit into a political model based primarily on religious and ethnic identification. Moreover, Hammarberg challenges the notion that one can order religious denominations from the most pietistic to most liturgical, as do several of the "new" political historians— especially Richard Jensen and Paul Kleppner, who claim Republican support came from pietists while Democratic support came from liturgicals. Ranking denominations as do Jensen and Kleppner, Hammarberg does find a relatively strong correlation mirroring their findings. But when he simply correlates political preference with denomination identification without ordering the denominations, the procedure he insists is more appropriate, the resulting correlation is very weak.

Hammarberg also assesses the correlation between occupational status (a more easily defined variable than the abstraction "class") and partisan identification. Here he finds a significant correlation between partisanship and agricultural versus nonagricultural pursuits, a correlation higher than the one he found between partisanship and religious identification using the test he believes appropriate. This suggests that the "new" political historians may have been too quick to reject older notions that economic issues dividing farmers from townsmen—the Greenback issue in particular—were central to Indiana political alignments in the 1870s.[16] Finally, Hammarberg suggests the degree to which partisan identification seems to have been independent of all social variables, noting that such variables explained only about 20 percent of the variation in the Republican vote.

The importance of economic issues looms even larger when Hammarberg discusses the dynamics of individual elections in the 1870s. The results of presidential elections paralleled very closely the underlying partisan division, but the 1878 contest for state offices and the congressional elections—especially those of 1874 and 1878—differed significantly from that pattern, and the difference was associated largely with the Green-

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[16] Fred C. Haynes, *Third Party Movements Since the Civil War, With Special Reference to Iowa: A Study in Social Politics* (Iowa City, 1916), 105-52 (in these pages Haynes dealt with farmer unrest in its national context); Emma Lou Thornbrough, *Indiana in the Civil War Era, 1850-1880* (Indianapolis, 1965), 274-317; William G. Carleton, "The Money Question in Indiana Politics, 1865-1890," *Indiana Magazine of History*, XLII (June, 1946), 107-50; William G. Carleton, "Why Was the Democratic Party in Indiana a Radical Party, 1865-1890?" *Indiana Magazine of History*, XLII (September, 1946), 207-28; Irwin Unger, *The Greenback Era: A Social and Political History of American Finances* (Princeton, 1964).

back vote. Thus the important shift in Indiana elections in the 1870s, from Republican dominance to significant Democratic victories, was apparently due to the appearance of a party born out of economic grievances.

Hammarberg is unwilling, however, to explain the shifts in Indiana's voting behavior in terms of economics alone. Such a conclusion would imply that voters made rational choices, in this case based on economic interest, an idea deprecated by modern social scientists.[17] Instead, he turns to voting models posited by the eminent political scientist Philip E. Converse.[18] Hammarberg suggests that before the 1870s farmers and farm workers were less politically involved than were townspeople and that rural residents had weaker partisan attachments than did city dwellers. These differences occurred, he asserts, because farm folk had less contact with the institutions—churches, schools, cultural organizations—that provided links between social and political identification. According to Converse, such politically uninvolved independents and weak partisans vote in disproportionate numbers for winning presidential candidates but are less likely to vote in nonpresidential elections. Usually this pattern of voting behavior leads to stronger correlations between underlying partisan divisions and the actual vote in off year elections. It also explains why the party that loses a presidential election usually receives a higher percentage of the vote in the following congressional election. But, Hammarberg echoes Converse, this pattern may be reversed when some new issue brings a wave of new information to the electorate. Strong partisans and uninformed independents are the least likely to change their votes, while informed weak partisans and independents are the most likely to do so in such a time of ferment. In nonpresidential elections the *uninformed, uninvolved* independents, who would be unlikely to change their previous votes, tend to stay home in disproportionate numbers, thus magnifying the effect of the shifts among the *informed* weak partisans and independents, who are motivated

[17] Bernard Berelson, Paul Lazarsfeld, and William N. McPhee, *Voting* (Chicago, 1954); Bernard Berelson, "Democratic Theory and Public Opinion," *Public Opinion Quarterly,* XVI (Fall, 1952), 313-30; Donald Stokes and Warren E. Miller, "Party Government and the Saliency of Congress," *ibid.,* XXVI (Winter, 1962), 531-46; Philip E. Converse, "The Nature of Belief Systems in Mass Publics," in David Apter, ed., *Ideology and Discontent* (New York, 1964), 206-61. The "irrational voter" model has been challenged by V. O. Key, Jr., *The Responsible Electorate* (Cambridge, 1966).

[18] Philip E. Converse, "The Concept of a Normal Vote," in Angus Campbell *et al., Elections and the Political Order* (New York, 1966), 9-39; and Philip E. Converse, "Information Flow and the Stability of Partisan Attitudes," *ibid.,* 136-57.

to vote by the new issues. Since Hammarberg finds that presidential elections in Indiana in the 1870s reflected the basic partisan divisions more accurately than other elections, he suggests that the more unusual pattern that Converse describes explains voting behavior in Indiana during the 1870s. The spread of the Grange and the depression that began in 1873 led to a surge of political information and activity among rural weak partisans, Hammarberg concludes, and it was this increased political and economic interest that led to the electoral convulsions of the 1870s. In a further analysis, for some reason placed in an appendix rather than in the body of the book itself, Hammarberg employs the technique of ecological regression to estimate the number of voters who switched from one party to another between key elections. He finds that the Greenback candidates drew more votes from Republicans than Democrats, enabling Democrats to carry the state after 1874.

In sum, Hammarberg has presented a model that he feels explains Indiana voting behavior in the 1870s: presidential elections corresponded closely to an underlying partisan division in which Republican support was associated with Quakerism, residence in small towns and hamlets, nonagricultural occupations, and general Protestantism among small town and hamlet residents, while Democratic support was associated with foreign nativity among townspeople and lower occupational status and Catholicism or Lutheranism among those living in the open countryside (*but* in which by far the greatest variation in political preference was unexplained by social characteristics). Moreover, partisanship was stronger among townsmen and hamlet dwellers than among more rural folk. In nonpresidential, and especially in congressional, elections in the 1870s the least informed and politically involved voters— who tended to stabilize electoral voting patterns—voted in fewer numbers, while better informed weak partisans— concentrated primarily in the countryside, hit by depression, and suddenly subject to new flows of information through recently established Grange organizations—defected in large numbers from former allegiences and swung disproportionately to the Greenbackers and the Democrats.

Hammarberg's book may well provide the model for future studies of past voting behavior. His decision to separate election results into a "normal vote" component (that is, the component based on underlying partisan divisions) and a component specific to the individual elections is certain to be followed, although other scholars may choose to define the "normal vote" differently. His use of ecological regression parallels

Morgan Kousser's procedure in his study of southern disfran-
chisement at the turn of the century and will help establish it
as a staple tool of the quantitatively oriented political histo-
rian.[19] Hammarberg has few peers among historians in his
knowledge of sampling methodology, and his procedure of ad-
justing for sample bias should have a major impact. Finally, he
is probably the first scholar to harness John A. Sonquist and
James N. Morgan's Automatic Interaction Detector (AID) pro-
gram for historical investigation; the form of the output is so
appealing and so congruent with what historians want to know
that Hammarberg's colleagues are sure to want to experiment
with it further.

Despite his innovative statistical method, his reliance upon
"hard," quantified data, and his definition of a model to explain
mass political behavior over a span of years, Hammarberg's
work illustrates the point made several years ago by a group of
scientifically oriented historians: "If there is a method to the
historical craft it is that of the detective—the careful collection
of clues, the matching of one piece of evidence with another,
and ultimately the formation of an answer to what really hap-
pened. For all their radical use of new methods, most historians
interested in quantification have remained within this tradi-
tion. Indeed most quantifiers claim that they simply possess a
superior way of gathering objective clues."[20]

Though Hammarberg at one point indicates that he will
depart from this tradition somewhat and will use data to test
his hypotheses about short term voter behavior (pp. 148-50), he
never really seems to do so. Although he does not explain his
research design (itself an indication that he is not following
traditional scientific procedure), it seems that he applied his

[19] J. Morgan Kousser, *The Shaping of Southern Politics: Suffrage Restric-
tion and the Establishment of the One-Party South, 1880-1910* (New Haven,
1974). Unlike Kousser, Hammarberg does not test the accuracy of his ecological
regression results against real voting results. Since this procedure requires that
certain key assumptions be met, one must be wary of Hammarberg's figures, as
Hammarberg himself recognizes but does not emphasize strongly enough (pp.
182-83). Those readers statistically inclined should see Leo A. Goodman,
"Ecological Regressions and the Behavior of Individuals," *American Sociological
Review*, XVIII (December, 1953), 663-64; and Leo A. Goodman, "Some Alterna-
tives to Ecological Correlation," *American Journal of Sociology*, LXIV (May,
1959), 610-25. Readers should keep in mind Goodman's stricture that his
method for deriving individual behavior from aggregate data is applicable only
"under very special circumstances" (italics Goodman's).

[20] Morton Rothstein *et al.,* "Quantification and American History: An
Assessment," in Herbert J. Bass, ed., *The State of American History* (Chicago,
1970), 317. Note, for example, the absence of any discussion of scientific hy-
pothesis testing in Richard Jensen, "Quantitative American Studies: The State
of the Art," *American Quarterly*, XXVI (August, 1974), 225-40.

sophisticated techniques to his data, reflected upon the results, drew conclusions from them, then proceeded to explain to his readers why he drew those conclusions—the same process historians using more traditional methods follow.[21] Thus Hammarberg's model of Indiana voting dynamics in the 1870s is more like an hypothesis, developed through an imaginative assessment of the data, but not certainly tested after its formulation. Of course, his conclusions are congruent with the data he presents, but one is not compelled by his method to concur in them. For example, although Hammarberg indicates that he will test the application of Converse's understanding of the role of weak partisans and independents in electoral shifts, he never does so. Demonstrating that the voting patterns of the 1874 and 1878 congressional elections did indeed depart dramatically from the normal partisan division reflected in the presidential year elections of 1876 and 1880, Hammarberg simply deduces from that fact the role that weak partisans played in the changes and the link between weak partisanship and rural voters (pp. 148-53, 168-76).

The "hard" evidence he adduces to link volatile weak partisanship to rural voters seems particularly questionable. To sustain this proposition, Hammarberg points primarily to the nearly even Democratic-Republican division among countryside electors in his *People's Guide* counties. But such a group statistic cannot tell one how strongly individuals felt about their allegiences. One may as well argue that voters were more strongly committed to their parties in one party states like Vermont than in hotly contested ones like Indiana. Hammarberg's confidence in this conclusion is bolstered by the fact that he found almost no correlation between political preference and social characteristics among rural voters. He suggests that few of the institutions that reinforce religious, ethnic, or economic identification extended to the open countryside; thus, the most important determinants of political affiliation were absent. But this is not additional evidence. It may explain *why* rural Hoosiers were weak partisans *if* they were, but it cannot prove the original proposition.

Several tests seem appropriate. First, if Hammarberg is right, then there should have been a substantially higher pro-

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[21] That Hammarberg followed such a procedure seems obvious not only because Hammarberg does not make a different procedure explicit (description of the research design is one of the requirements of scientific procedure) but because the evidence he offers to sustain his conclusions is not as persuasive as evidence specifically designed to test an hypothesis would have been. Some tests are suggested below.

portion of independents among countryside residents than among small town and village residents. But the data Hammarberg himself gives do not seem to sustain the hypothesis. Hammarberg's sample indicates that 82.0 percent of the voters living in the open countryside identified with one of the major parties while 87.3 percent of the townspeople did the same. While the sample almost certainly reflects a real difference in the two groups (less than twenty-five chances out of one thousand that it does not), the difference itself is not very big. In fact the *phi* correlation between the two groups is a high .824, where complete difference would be -1.0.[22]

Second, if it is true that those who do not vote in off year elections are more likely to be independents and weak partisans than those who do vote—an assumption critical to Hammarberg's explanation of electoral dynamics in Indiana in the 1870s—and if rural Hoosiers were less apathetic after the depression of 1873 excited their interest in politics, there should have been a more strongly positive association between voter turnout and the degree of a voting unit's "ruralness" after 1873 than before. For the same reason, before 1873 there should have been a stronger relationship between the degree of a county's "ruralness" and the decline in its number of voters in off year elections.[23] In this case analysis bears out Hammarberg's hypothesis: there was no significant association between "ruralness" and voter turnout in the elections of 1868, 1870, or 1872, but there was such an association in the elections of 1874, 1876, and 1878. In fact, the realtionship may have been stronger than Hammarberg indicates.[24] Likewise, the greater

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[22] The statistical significance of the differences in the samples is based on the *chi*-square test. For a simple explanation of *chi*-square, see Kerlinger, *Foundations of Behavioral Research*, 150-55. For *phi*, see John T. Roscoe, *Fundamental Research Statistics For the Behavioral Sciences* (New York, 1969), 86-87. In his text Hammarberg evaluates differences in overall partisan alignment—that is, the different proportions of Democrats, Republicans, and independents—between rural and nonrural voters (p. 131). But he does not test for differences in the proportions of independents and the adherents of either major party—a test more directly relevant to his thesis. Moreover, while he uses a *chi*-square test to show the statistical significance of the differences, he does not use a measure of association, such as Goodman and Kruskel's *tau* to describe the magnitude of those differences. For appropriate measures of association for categorical data such as Hammarberg presents, see Hubert M. Blalock, *Social Statistics* (2nd ed., New York, 1972), 295-303.

[23] Hammarberg finds a positive association between "ruralness" and the average on year and off year voter turnouts during the 1870s (p. 167). This leads him to suggest that rural weak partisans were the most active agents in electoral change. But he does not test the pre-1873 and post-1873 relationships separately, as he should do to see whether rural activity was the new phenomenon he insists it was.

[24] Hammarberg derives the relationship from a linear equation, but a scattergram of the relevant data indicates a stronger, nonlinear relationship. Readers unfamiliar with this terminology should consult W. Phillips Shively, *The Craft of Political Research: A Primer* (Englewood Cliffs, N.J., 1974), 106-12.

the degree of "ruralness" of a county, the greater the decline in voting turnout was likely to be in 1870 compared to the presidential year of 1868; there was no similar relationship in the 1874 or 1878 off year elections.[25] These tests sustain Hammarberg's conclusion that the voter turnout increased in rural areas after the depression of 1873 and permit one to turn with some reassurance to other facets of his model.

According to Hammarberg, the increased political activity among rural Indiana residents explains the electoral shifts of 1874 and 1878, as rural weak partisans voted in disproportionate numbers against Republican candidates, while nonrural weak partisans remained apathetic. Again, it seems that there are several ways to test Hammarberg's proposition. For example, if it is true that Democratic and Greenbacker gains in 1874 and 1878 were due to a shift in their direction by weak partisans and independents, then the increase in the Democratic and Greenback vote should parallel the increase in the number of independents Hammarberg found in the *People's Guide* counties. In rural areas the independents would swing heavily to the Greenbackers and Democrats, while in nonrural areas they would be more likely not to vote at all. Since Hammarberg posits that independents would have been influenced more than strong partisans by the Republican partisan drifts of 1872 and 1876, the independents' absence from the polls in nonrural areas would deprive Republicans of support in off year elections even if they did not actively back the Democrats. However, there was no such association.[26]

On the other hand there was a fairly strong correlation between the number of independents Hammarberg found in the *People's Guide* counties and the substantial Democratic gains of 1874 over 1870 ($r=.526$). This suggests that Hammarberg may have at least misconstrued the process by which turnout affected results. Rather than rural independents shifting dispro-

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[25] The correlations (Pearson's r), ranging from .192 to .270, are significant at the .03 level or better (three chances in a hundred that the correlation actually was zero) but are not very high, explaining only about 5 percent of the variation in voter turnout. Pearson's r ranges from 1.0, a perfect positive correlation, to -1.0, a perfect negative correlation. An r of 0.0 describes no association at all. For a simple explanation, see *ibid.*, 103-24.

Since the 1870 and 1880 censuses did not provide rural-small town population breakdowns at the county level, the ratios between each county's farm and manufacturing production, number of farm and manufacturing business establishments, and number of farms and population were used as surrogate statistics to test Hammarberg's hypothesis. According to his tables Hammarberg was able to determine the proportion of rural population in each county, but it is unclear how he derived the information. Naturally, a more exact statistic might lead to still different results.

[26] For 1872-1874 Pearson's $r=.0001$ and for 1876-1878, $r=.002$.

portionately with the partisan drift in each election, they may have switched to the Democrats in larger numbers than other voters as early as 1872 and stayed firm in their new allegience. This political shift in 1872 might have been masked by the powerful appeal Republicans made to their weak partisans on Reconstruction issues and by a lower than usual turnout among Democratic weak partisans who were demoralized by the failure to nominate a straight Democratic candidate.[27]

The tenuousness of Hammarberg's reliance on differences in weak partisan voter turnout in on year and off year elections to explain election shifts is apparent when one compares voter turnout and Democratic and Greenbacker gains in 1874 and 1878. If Hammarberg's model is accurate, one would expect that the greater the voter turnout in 1874 compared to 1872 and in 1878 compared to 1876, the greater the increase would be in the Democratic and Greenbacker proportion of the vote. This relationship holds true for the election of 1874 but not for that of 1878.[28]

Estimates of actual voting behavior, derived through ecological regression, the technique Hammarberg employs in his Appendix A (but in this case including nonvoters as well as voters), illustrate the voting patterns underlying the statistics presented above. The frequencies in the following tables are estimates of the proportions in which groups of voters in one election voted in the next. The associated numbers are the loss or gain of votes that the proportion represented.[29]

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[27] A large desertion of Democrats in 1872 is suggested by estimates derived from the same procedures that generated Tables I through III below.

[28] For the relationship in 1874, $r = .226$ ($s = .02$—that is, there are two chances in one hundred that this relationship was due to chance); in 1878 the relationship between the increase in turnout compared to 1876 and the increase in the Democratic-Greenback share of the vote was $-.122$ ($s = .135$).

[29] Ecological regression is based upon multiple regression analysis, which solves an equation in which a dependent variable (for example, the Republican percentage of the vote in 1874) is predicted from a series of independent variables (in this case, the Republican percentage of the vote in 1872, the Democratic percentage, and the percentage not voting). Since one knows the value of the independent variables (in this example, the voting percentages of 1872) and the dependent variable (the Republican percentage of the vote in 1874), one can find how the independent variables must be weighted so that when they are added together they come as close as possible to equalling the dependent variable in every case (in this example, in every county). These weights (called betas) indicate how much the dependent variable will change for each unit's change in the independent variable. Ecological regression translates the formula into actual numbers for the situation in which the pattern is uniform over all units (in this case, this means that the same proportion of 1872 Republicans are presumed to have voted Republican in 1874 in every county, the same proportion of Republicans to have switched to the Democrats, and so on). The wider the actual pattern diverges from this ideal, the less accurate the prediction will be. In the election described by Table II, for example, the real pattern diverged from the ideal by the estimate

    Table I complements nicely the small but statistically sig-
nificant correlation between increased turnout and Democratic
gains in 1874 over 1872. It indicates that Republican losses
(and the corresponding gains in the Democratic percentage of
the vote) were due to the failure to vote of about one quarter of
the voters who sustained the party in 1872. However, Ham-
marberg's model does not very well explain the voting behavior
estimated in the table. According to his hypothesis, newly
active rural weak partisans should have been more likely to
vote in 1874 than their small town and urban cousins and
should have moved with what Hammarberg believed to be a
Democratic partisan tide. But the table suggests that hardly
any of the defecting Republicans voted Democratic in 1874 and
draws into question the relationship Hammarberg posits be-
tween failure to vote, weak partisanship, and partisan tides. If
anything, Table I suggests a Republican partisan tide because
the regression equation estimates that Republicans gained
votes in 1874 from electors who supported the candidates of the
Democratic-Liberal Republican coalition of 1872 and also car-
ried most of the 1874 voters who had not gone to the polls in
1872. Yet, in apparent contrast to this success, over three times
as many Republicans as Democrats are estimated to have
stayed away from the polls in 1874. This indicates that some-
thing beyond the mere tendency of weak partisans not to vote
in off year elections was involved in the Republican defection of
1874.

    Tables II and III suggest an equally complex story. It is
apparent from Table II that there was no real partisan drift
toward the Republicans in 1876. Thus Hammarberg's sugges-
tion that Democratic and Greenbacker gains in 1878 were due
in part to the failure to vote of weak partisans who had been

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that over 100 percent of the independent voters of 1874 voted for the Republi-
can congressional candidates in 1876. A negative proportion indicates the same
thing. Nonetheless, the vote predicted by the formulas is close enough to the
actual vote to suggest the general reliability of the figures. (Since the predicted
vote is based upon the population of two years earlier, it underestimates the
total number of voters, explaining part of the shortfall in actual numbers.) The
only serious exception to this general reliability is the proportions associated
with the "Other" vote in Tables II and III. For an explanation of regression
analysis, the interested reader should consult Shively, *The Craft of Political
Research*, 103-24, in tandem with Blalock, *Social Statistics*, 361-95. No easily
readable explanation of ecological correlation has yet appeared. The interested
reader must wrestle with Goodman, "Ecological Correlation and the Behavior
of Individuals"; Goodman, "Some Alternatives to Ecological Correlation"; J.
Morgan Kousser, "Ecological Correlation and the Analysis of Past Politics,"
Journal of Interdisciplinary History, IV (Autumn, 1973), 237-92; W. Phillips
Shively, "Ecological Inference: The Use of Aggregate Data to Study Individ-
uals," *American Political Science Review*, LXII (December, 1969), 1183-96; and
Murray G. Murphey, *Our Knowledge of the Historical Past* (Indianapolis, 1973),
156-69.

TABLE I

1872 Congressional Vote (actual vote in parentheses)	Predicted 1874 Congressional Vote			
	Democratic	Republican	Other	Not Voting
Liberal Republican-Democratic (187,504)	.915 (−15,964)	.032 (+6,010)	.013 (+2,441)	.040 (+7,512)
Republican (188,772)	−.015 (----)	.766 (−47,424*)	−.009 (----)	.257 (+47,424*)
Not Voting (33,696**)	.121 (+4,077)	.303 (+10,210)	.004 (+135)	.572 (−14,422)
Predicted 1874 Vote	175,917 (52.3%)	157,561 (46.9%)	2,576 (0.8%)	74,210
Actual 1874 Vote	183,185 (50.7%)	168,702 (46.7%)	9,614 (2.7%)	70,812**

*Where positive cell frequencies across a row total more than 1.000, the estimated vote is divided proportionately between them.
**Estimated from the 1870 and 1880 censuses.

drawn disproportionately to the Republicans by the partisan tide of 1876 cannot be completely accurate. While it is not impossible that Table III simply reflects the shift of 27,500 primarily rural weak partisans from the Republicans to the Greenbackers and the apathy of another 34,500 primarily non-rural Republicans and Democrats who did not vote in 1878, such a conclusion is unlikely in light of the absence of a correlation between increased turnout and Democratic and Greenbacker gains. Moreover, if Hammarberg's model were correct, one would expect a positive association between Greenbacker gains and "ruralness," but there is none.[30] Finally, Hammarberg's model does not explain why Democratic weak partisans were not drawn to the Greenbackers as strongly as Republican weak partisans in 1878.

In sum, the mechanistic elements of Hammarberg's model, based upon the propensities of weak partisans not to vote in off year elections and linking weak partisanship to rural Hoosiers do not seem to hold up. Hammarberg himself finds that turnout and "social characteristics," among which "ruralness" was only one, explained only a small proportion of the variation in the two party voting pattern in the 1870s (p. 171); they played an even smaller part in the variation in patterns of Democratic and Greenbacker gains in 1874 and 1878.[31] In fact, one familiar with the politics of the 1870s might suggest different hypotheses, ones that endorse Hammarberg's position that voters were stimulated by the issues of the 1870s but that minimize the importance of mere voter apathy, as it should be in an age when 90 percent voter turnouts were common. One could hypothesize, for example, that disgusted Republicans sat out the election of 1874 to protest the Salary Grab, the Credit Mobilier fraud, and the other scandals that rocked their party in 1873 and 1874 and/or that Republicans who favored measures to inflate the currency abandoned their increasingly hard money oriented party for the Greenbackers in 1878 while Democrats, whose state organization already pressed for inflation, felt no need to follow suit. These hypotheses are congruent

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[30] Pearson's r never exceeds .11 when correlating Greenbacker gains with any measure of "ruralness." There is, however, a significant correlation ($r=.24$ or .25, depending on the measure of "ruralness") between the combined Democratic and Greenbacker gains of 1878 and 1874 and measures of "ruralness." This suggests that a disproportionate number of Democrats who did not vote in 1878 may have resided in small towns.

[31] "Ruralness" and increases in turnout together account for only 5 percent of the variation in the pattern of Democratic gains in 1874 over 1872, 7 percent of the variation in the pattern of combined Democratic and Greenbacker gains in 1878 over 1876, and 1.5 percent of the variation in the pattern of Greenbacker gains alone over the same years. The figures are derived through multiple correlation analysis.

TABLE II

1874 Congressional Vote (actual vote in parentheses)	Predicted 1876 Congressional Vote			
	Democratic	Republican	Greenbacker	Not Voting
Democratic (183,185)	.925 (−18,674*)	.062 (+11,027*)	−.030 (----)	−.043 (+7,648*)
Republican (168,702)	.074 (+11,766*)	.920 (−22,419*)	.069 (+10,653*)	−.060 (----)
Other (9,614)	−.507 (----)	1.870 (+9,374*)	.044 (+210*)	−.407 (----)
Not Voting (70,812**)	.252 (+17,845)	.352 (+24,926)	.106 (+7,506)	.290 (−50,277)
Predicted 1876 Vote	194,122 (48.0%)	191,630 (47.4%)	18,369 (4.5%)	28,183
Actual 1876 Vote	212,288 (49.2%)	204,419 (47.4%)	14,959 (3.5%)	22,687**

*Where positive cell frequencies across a row total more than 1.000, the estimated vote is divided proportionately between them.
**Estimated from the 1870 and 1880 censuses.

TABLE III

Predicted 1878 Congressional Vote

1876 Congressional Vote (actual vote in parentheses)***	Democratic	Republican	National (Greenbacker)	Not Voting
Democratic (174,910)	.864 (−27,474)	.000 (----)	−.028 (----)	.161 (+27,474)
Republican (172,008)	−.040 (----)	.833 (−34,764*)	.167 (+27,515*)	.044 (+7,249*)
Greenbacker (12,689)	.544 (+5,870*)	−.088 (----)	.632 (−5,870*)	−.086 (----)
Not Voting (18,899**)	.141 (+2,687*)	.151 (+2,845*)	−.030 (----)	.711 (−5,502*)
Predicted 1878 Vote****	155,963 (47.2%)	140,089 (42.4%)	34,344 (10.4%)	48,120
Actual 1878 Vote***	158,466 (46.3%)	153,156 (44.7%)	30,804 (9.0%)	59,600

*Where positive cell frequencies across a row total more than 1.000, the estimated vote is divided proportionately between them.
**Estimated from the 1870 and 1880 censuses.
****Excluding counties where Greenbackers nominated candidates jointly with Democrats or Republicans in 1878.

with the voting patterns uncovered through ecological regression and the assessments of contemporary political observers.

Hammarberg has written a valuable and instructive book—valuable and instructive both in its successes and in its shortcomings. The imaginative use of statistical methods—which in this review have even been used to challenge some of Hammarberg's conclusions—and the description they permit of the basic partisan divisions in Indiana in the 1870s will be of lasting significance. But the shortcomings are no less instructive. Most graduate training in history puts slight emphasis on the role of hypothesis development and testing in research. It is a procedure as essential for those using conventional sources as for those utilizing quantitative methods, but its importance is more obvious where data can be easily reproduced and harnessed to test researchers' conclusions. Clear formulation of hypotheses and a carefully constructed and articulated research design to test them would have demonstrated the weakness of Hammarberg's model in explaining short term changes in voting results (or, if the conclusions in this review are in error, would have made a more convincing case based on more appropriate tests than are offered in the book or in this critique). As Alfred North Whitehead explained forty years ago, the formulation of "an hypothesis directs observation, and decides upon the mutual relevance of various types of evidence. In short, it prescribes method."[32] In *The Indiana Voter* it appears that Hammarberg did not approach his data with methods prescribed by his hypothesis. Such procedure, or lack of it, suggests that instead of quantification subverting the traditional historical craft, as many conventional historians have worried that it would, the shortcomings of the traditional historical method are subverting the scientific orientation of the quantification movement.

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[32] Alfred North Whitehead, *Adventures of Ideas* (New York, 1933), 285.