

Pioneers in Quantitative History at the University of Iowa

WILLIAM SILAG

IN A SPEECH presented twenty-two years ago to the Iowa State Education Association, Professor Samuel P. Hays of the University of Iowa called upon the state's historians to reconsider their approach to the study of the past. Annoyed by what he deemed the profession's unwillingness to confront "the human side of the past," Hays charged that most scholars relied on a mode of historical thinking that emphasized "top-level affairs" over "grass-roots happenings." Too many historians drew their understanding of bygone eras from written documents left by literate chroniclers—typically members of social elites—without regard for the experiences, values, and actions of those who were less articulate or powerful.

This was a naive history, Hays asserted, and it was also dishonest. Real life presented a chaos of ambitions and uncertainties, but the average textbook described a neat succession of events leading inexorably to the present scheme of things. And where the textbook proceeded on the assumption of a homogeneous society bound by cultural consensus, personal experience revealed a variety of social and economic groups competing with one another for scarce resources, political power, and cultural dominance. So dissimilar were history and real life that the presumed connection between the two seemed fraudulent, Hays

warned the teachers. No wonder students turned away from the study of history in frustration.¹

Hays went on to call for a history from the grass-roots, a history that would "systematically study human experience and behavior," not only among the elites of past eras, but also among the lowly and inarticulate. Such a history would be analytical as well as descriptive, and would seek to build "solid and concrete generalizations" on the basis of empirical observations.² Thus, in no uncertain terms, Professor Hays called on his professional colleagues to adopt the behavioral principles that had already transformed the study of psychology, anthropology, sociology, and political science, and at least implied that historians might join the ranks of the social scientists.

Hays's views were radically new in 1959, but they were shared by several other members of the History Department of the University of Iowa in Iowa City. Earlier in the 1950s, Professor William O. Aydelotte had assumed the department chairmanship and brought to the university a number of innovative historical scholars, among whom were Hays and Professor Allan G. Bogue. With their chairman, Hays and Bogue shared a fascination with "the human side of the past," and thus had an interest in what we have termed "grass-roots history." All three were behavioralists, in that each believed that the soundest historical generalizations emerged from systematic observation of human behavior in society. Finally—and perhaps most important—Aydelotte, Bogue, and Hays enthusiastically supported attempts to apply the methods of the social sciences to the study of the past.³

The behavioralism of these pioneer scholars in the 1950s evolved into the computer-assisted social-science history of today. The break with tradition in terms of historical methodology occurred not with the introduction of statistical data or the computer in the 1960s, but with the adoption of

¹Samuel P. Hays, "History as Human Behavior," *Iowa Journal of History* 58(July 1960):193.

²Ibid.

³Their work and the work of their students is reviewed by Robert P. Swierenga in the introduction to *Quantification in American History: Theory and Research*, ed. Robert P. Swierenga (New York: Atheneum, 1970).

behavioralism by the Iowa historians in the 1950s. Quantification and the computer have from the outset been means to a behavioral end, namely the empirical verification of generalizations concerning human activity in the past.⁴

Back to the 1950s for a brief look at the work of our three scholars: Aydelotte is a student of British politics, with a particular interest in the social characteristics of the members of the British Parliament. As a political historian, he became familiar early in his career with the statistics of roll-call voting and other legislative activities. Hays too is a political historian, but his concerns deal more with matters of economic and cultural cleavages within the electorate. His is a social history of politics, wherein economic and demographic data form a sizeable share of the historical evidence. Later, Bogue also published work in political history, but in the 1950s his publications fell primarily in the area of economic history, especially the history of pioneer settlement and early agriculture on the American prairie. Obviously, numerical information on population growth, farm productivity, and price trends was central to Bogue's work in this field.⁵

All three scholars, then, had experience working with empirical data of one kind or another, and—because of their respective research interests—each probably had occasion to consult the literature of related social-science disciplines. Aside from the breadth it gave their own scholarship, their work in these areas made them superior advisors to the ambitious graduate students entering the department in the late fifties and early sixties, many of whom quickly adopted the behavioral approach in their own dissertation research and began digging in new sources for the data needed to document their theses.

These graduate students were fortunate in coming to Iowa to do their advanced work, not only because of the intellectual stimulation provided by a first-rate faculty, but also because the

⁴The words are those of William O. Aydelotte. See his *Quantification in History* (Reading, MA: Addison-Wesley, 1971), pp. 4, 39.

⁵Allan G. Bogue, *Money at Interest: The Farm Mortgage on the Middle Border* (Ithaca: Cornell University Press, 1955); Samuel P. Hays, "A Systematic Social History," in *American History*, ed. George A. Billias and Gerald N. Grob (New York: Free Press, 1971), pp. 315-366.

state's libraries and government offices contained a bounty of historical sources perfectly suited to the type of behavioral analysis the young scholars had in mind. Extensive collections of manuscript census material, biographical directories, and local atlases at the Iowa State Historical Department's Division of the State Historical Society (Iowa City) and the Division of Historical Museum and Archives (Des Moines), important agricultural records stored in county and state offices, and voting tallies on file in courthouses—a gold mine of historical information—made possible the kind of grass-roots history Professor Hays was seeking. Hays himself had used little-known records of farm and trade associations in combination with voting statistics in a study of special-interest legislation of the nineteenth century. And Bogue's classic study of midwestern agriculture, *From Prairie to Corn Belt*, relies heavily on the systematic analysis of data garnered from county deed and mortgage records, tax assessment records, and other sources found in county archives around the state of Iowa.⁶

Likewise, their students sought out similar sources of quantitative data that might permit a closer look at the "human side of history." In 1962, George Daniels completed a study of Iowa voting patterns on the eve of the Civil War that showed—contrary to conventional wisdom—that Germans and other immigrant groups in Iowa were less than enthusiastic supporters of the Republican presidential candidate, Abraham Lincoln. Daniels based his conclusion on an analysis of precinct-level voting data which had not previously been considered in studies of antebellum voting. In a follow-up study published three years later, Daniels' classmate Robert P. Swierenga showed that Iowa's Dutch voters also turned to the Democrats in 1860. Through careful consideration of the voting returns and local newspaper reports, Swierenga discovered that the critical political issue for these immigrant voters had little to do with the sectional conflict spreading across the nation, but was

⁶Samuel P. Hays, "The Politics of Reform in Municipal Government in the Progressive Era," *Pacific Northwest Quarterly* 55(October 1964):157-164; Allan G. Bogue, *From Prairie to Corn Belt: Farming on the Illinois and Iowa Prairies in the Nineteenth Century* (Chicago: University of Chicago Press, 1963).

related to something much closer to home for the Hollanders of nineteenth-century Iowa—namely their distaste for Republican-style prohibition and nativism. Swierenga's evidence revealed that, even when directed by their powerful leader Henry Peter Scholte to support the Republicans, more than 70 percent of the Hollanders voted for the live-and-let-live political culture of the Democratic party.⁷

Like Daniels, Swierenga had gone beyond the published statements of contemporary spokesmen—most of whom simply declared the immigrants' allegiance to the Republican cause—to dig in the sources of grass-roots history. His conclusions, based on irrefutable statistical calculations, teach something about politics and society in nineteenth-century America. They also illustrate the possible dangers of accepting at face value the interpretations of events left by the articulate minorities of this or any other era.

The work of Daniels and Swierenga demonstrates the comparative dimension of the behavioralists' approach to historical analysis. In researching the Hollanders' voting records, Swierenga set out not only to examine the politics of Dutch immigrants, but also to test Daniels' conclusions concerning the political activities of Iowa's immigrant population. The question became: Would Daniels' conclusions on German voters explain the behavior of Dutch voters as well? This is what the behavioralists mean by the expression "empirical verification of generalizations." In this case, Daniels' findings supplied Swierenga with a starting point for his own investigation of immigrant politics. And the results—clear distinctions among Iowa's ethnic voters—are presented in a common frame of reference that could be used by scholars who attempt subsequent research along similar lines.

Note, too, that the early quantitative research undertaken by members of the Iowa School yielded important insights and substantive findings on a significant historical issue. Quantitative researchers, and proponents of the behavioral approach in

⁷George Daniels, "Immigrant Vote in the Election of 1860: The Case of Iowa," *Mid-America* 44(July 1962):146-162; Robert P. Swierenga, "The Ethnic Voter and the First Lincoln Election," *Civil War History* 11(March 1965):27-43.

general, are sometimes dismissed on the grounds that they are preoccupied with technique rather than substance, and that their findings are trivial.⁸ Quantification will not guarantee historical significance to any research project, of course, but neither does it doom the researcher to historical triviality. Indeed, the use of quantification by the Iowa historians in the 1960s led several of them to historiographical breakthroughs that would have been impossible without the new statistical methodology.

Robert Swierenga's work in economic history provides a case in point. Swierenga began his dissertation research with questions familiar to historians of the American frontier: Did the frontier land speculator profit by his investments, and, if so, to what extent were his profits on a par with other forms of investment in the nineteenth century? Research by Allan Bogue and others had suggested that the frontier land speculator was something more than a reckless amateur in this regard; Swierenga engaged in a rigorous analysis of land transactions in thirty-three frontier Iowa counties to test this hypothesis.⁹ By means of federal tract books compiled from original public land patents filed in the office of the Iowa secretary of state, as well as deed registers and price data on alternative investment opportunities in nineteenth century America, Swierenga traced sales of individual parcels of land from the original purchaser (the land speculator) onward, and then considered the extent to which the speculator's returns matched profits in other lines of investment.

Swierenga's methods were those of the economist and the accountant, involving tedious recording of thousands of pieces of information on dates of entry, selling prices, and tax assessments. In order to reduce a mass of numerical data to manage-

⁸See for example Barrington Moore, *Social Origins of Dictatorship and Democracy: Lord and Peasant in the Making of the Modern World* (Boston: Beacon Press, 1966), and Arthur M. Schlesinger, Jr., "The Humanist Looks at Empirical Social Research," *American Sociological Review* 27(December 1962):768-771.

⁹Robert P. Swierenga, "Land Speculator 'Profits' Reconsidered: Central Iowa as a Test Case," *Journal of Economic History* 26(March 1966):1-28. See also Swierenga's *Pioneers and Profits: Land Speculation on the Iowa Frontier* (Ames: Iowa State University Press, 1968).

able proportions, Swierenga engaged the services of Gerard P. Weeg, then director of the university's computer center. Swierenga entered his data on IBM punch cards for machine processing; and Weeg wrote a computer program that tabulated the land sales figures and other information. The program results documented the profitability of the pioneers' investments in prairie acreage. The results indicated that the frontier land speculator enjoyed great success as a venture capitalist. Contrary to the conclusions of most previous historians, land speculation—at least in Iowa—was enormously profitable, perhaps the best investment a capitalist could have made in the middle decades of the nineteenth century.¹⁰

Swierenga's dissertation—completed in 1965—was one of many produced in the University of Iowa History Department that embraced the new quantitative methodology. Joel Silbey's scalogram analysis of partisan loyalties in the antebellum United States Congress, Samuel McSeveny's study of electoral behavior in the Gilded Age, and Seddie Cogswell's examination of ethnic factors in frontier agriculture in Iowa all pointed to the impact of the ideas of Aydelotte, Bogue, and Hays on Iowa's historians, even though Hays and Bogue move on to other positions in the mid-sixties.¹¹ What they bequeathed to their students was not simply a handbook of behavioral techniques, but an innovative frame of mind that welcomed new methods in all areas of historical analysis. The work of their students is a testament to their continuing influence on contemporary scholarship.

Robert Dykstra's recent work on the history of the black suffrage question in nineteenth-century Iowa nicely exemplifies this innovative frame of mind. Dykstra confronts an issue that has interested historians for some time: Iowa's unusually early

¹⁰Ibid.

¹¹Joel Silbey, *The Shrine of Party: Congressional Voting Behavior, 1841-1852* (Pittsburgh:University of Pittsburgh Press, 1967); Samuel T. McSeveny, *The Politics of Depression: Political Behavior in the Northeast, 1893-1896* (New York:Oxford University Press, 1972); Seddie Cogswell, *Tenure, Nativity, and Age as Factors in Iowa Agriculture, 1850-1880* (Ames:Iowa State University Press, 1975). Stanley Parson's research on midwestern Populism was the first by a graduate student to employ a computer.

support for a constitutional amendment giving black citizens the right to vote, which had been denied them by the terms of the Iowa constitution of 1857. In the constitutional referendum of that year, Iowa voters had explicitly rejected black suffrage; but, in another referendum held in 1868, they became the first electorate in the nation to welcome blacks to the voting booths. What had caused this shift away from racism? Was it related to the solidarity of the Republican party in Iowa, where some radical proponents of racial equality enjoyed the support of rank-and-file party members? Or was it part of a general popular movement for reform in the post-war period?

To answer these questions, Dykstra compiled a body of statistical evidence describing the state's several votes on the race question during the Civil War era, along with information on changes in the intensity of Iowa's commitment to Republican party candidates. Much of this material was summarized by means of univariate statistical measures—such as percentages and averages—and then correlated to determine the exact dimensions of the change in voting patterns over time. Thus far Dykstra's techniques followed recent conventions among political historians in studies of American electoral behavior. But Dykstra was curious about the extent to which voter preferences in a series of elections could be used to predict their performance in a subsequent election. Such an analysis involves consideration of a whole series of elections in order to determine continuities in electoral behavior. With the help of the university's computer center and a program called the Statistical Package for the Social Sciences, Dykstra performed a multiple regression analysis on his voting data. Dykstra found that Iowans felt a growing concern for the civil rights planks of Republican party platforms throughout the 1860s and were willing to demonstrate that concern at the polls. Furthermore, Dykstra concluded, this retreat from racism appears to have been unrelated to a larger movement for reform. Most of the evidence indicated that by 1868 Iowa voters were ready to embrace the doctrine of political equality on its own merit.¹²

¹²Robert R. Dykstra, "Bright Radical Star," *Radical Republicans in the North*, ed. James C. Mohr (Baltimore: Johns Hopkins University Press, 1976), pp. 167-193.

Research results like those of Dykstra and Swierenga demonstrate the importance of the new quantitative history in revising traditional interpretations of the American past and in breaking new ground in historical analysis. They also show the profound impact exerted by behavioralism on the procedures followed by historians in the course of their research. These historians were forced by the nature of their quantitative methodology to make explicit at the outset just what they hoped to learn from their respective investigations. Swierenga had to decide on a firm definition of "profitability" before he could attempt to interpret his empirical findings. Likewise, Dykstra had to do some serious thinking about the meaning of "radical Republicanism" and "racism" in order to create the standards by which he would evaluate the various election results among nineteenth-century Iowans. As William Aydelotte and several other proponents of the new methods have noted, one of the principal benefits of adopting the quantitative method is that it forces historians to make unambiguous declarations of both their assumptions and their expectations *before* beginning their analyses.¹³ True, there are ways to lie with statistics, but practice has shown that sleight-of-hand is probably rarer in behavioral research than in work involving more traditional methods. Indeed, as an aid to logical thinking, the newer methodology has much to recommend it.

There are other advantages too, including the computer's ability to handle masses of data efficiently and inexpensively. Charges that the computer dehumanizes historical research are unfounded. No other recording system provides such easy access to the individual case or the specific item of information as does the computer. Of course, it is possible to get lost in the data, but the dangers in this regard seem no more serious with machine-readable data than with information handled in more conventional ways. Furthermore, because the computer demands precise description of the information submitted to it for storage and handling, it is a superb bookkeeping device.

A variety of computer-assisted research projects in the field of Iowa history are now underway. Lowell Soike has recently

¹³ Aydelotte, *Quantification in History*, pp. 41, 173.

completed a dissertation at the University of Iowa that considers the social and political experience of Norwegian-Americans in the years from 1880 to 1920. Soike's study is particularly interesting in its discussion of the ways in which one key immigrant group responded to the nativism of the World War I era and how challenges to the group's loyalty affected its political behavior.¹⁴ Like his teacher Robert Dykstra, Soike combines traditional sources such as newspaper reports with quantitative data drawn from the manuscript census and from precinct-level voting returns.

Two other studies now under way examine ethnic differences in family structure among nineteenth-century Iowans, with special attention given to such factors as age at marriage, family size, and the existence of extended family lines. Julia Mears has chosen Irish settlers in Clinton and Palo Alto counties for a comparative analysis of the Irish experience in eastern and western Iowa. Most of her data are taken from the manuscript census. Tamara Tieman's study in family history is somewhat different in scope, being a multi-state study of family structure on the American frontier in 1860. Tieman's study draws much of its information from a huge data set compiled by Robert Fogel and his associates as part of a project that resulted in his controversial book on slavery, *Time on the Cross*. Following the practice of many quantitative researchers, Fogel has made his data available to other scholars virtually free of restrictions now that he has completed his own work with it.¹⁵

Along that line, scholars at the University of Iowa have made a practice of donating data sets to the university's Social Science Data Archive, where it is stored for future use by the original investigator and (in most cases) by other scholars. A recent count indicated that there are now several dozen historical data sets stored there, many of which are drawn from Iowa materials.¹⁶

¹⁴Lowell J. Soike, "Norwegian-Americans and the Politics of Dissent, 1880-1924" (Ph.D. dissertation, University of Iowa, 1979).

¹⁵Research for both studies is in progress.

¹⁶Further information may be obtained from James Grifhorst, data librarian, or from John G. Kolp, who is the principal laboratory consultant for historical projects, Social Science Data Archive, Laboratory for Political Science Research, Schaeffer Hall, University of Iowa, Iowa City, IA 52242.

In 1978, John Kolp of the Political Science Research Laboratory of the University of Iowa, working with Loren Horton of the State Historical Society, devised a procedure whereby Iowa's genealogists might enter a cooperative arrangement with university scholars to collect and store in machine-readable form a variety of data taken from the manuscript schedules of the federal population censuses. The project is a model of the kind of joint effort needed to improve communications between academic and non-academic historians, and it also illustrates the utility of the computer for a variety of researchers.

Kolp's project staff designed a standardized computer data worksheet, had it printed in pads, and distributed a quantity of them to genealogists in Johnson, Keokuk, Jefferson, and Page counties. The genealogists were asked to record all pertinent information on the individuals listed in the manuscript population schedules for certain census years, following a coding scheme outlined in the project's instruction manual. Problems of legibility or interpretation of entry were to be noted in the "comments" section at the bottom of each worksheet.

The genealogists transcribed the census information on all the individuals in a single township in each of the selected counties. The completed worksheets were returned to the Laboratory for Political Research, where Kolp and his staff supervised keypunching and machine storage of the data. Spot-checking revealed that the genealogists—well versed in the subtleties of the manuscript census—provided more accurate transcriptions than project staff members were accustomed to seeing among their professional colleagues. The genealogists encountered no problems in following the coding scheme of the project's instructions either. In a matter of weeks, the laboratory had sent the genealogists alphabetized lists of the township populations they had coded, and also stood ready to supply them with basic statistical summaries of the economic and demographic features of these populations upon request.¹⁷

Kolp would be interested in reviving the cooperative project on a larger scale sometime in the future—if there is interest

¹⁷These data are now part of the University's Social Science Data Archive. The actual computer tapes are stored at the Weeg Computing Center at the University of Iowa.

among genealogists, local historians, and archivists and if some modest funding can be acquired—and continues to be enthusiastic about the research opportunities created by such an arrangement. Once the transcribed census data for a specific township is stored in the computer, of course, there is no need for genealogists to go back to the tedium of searching the microfilm. A simple instruction at the computer terminal will indicate the presence or absence of the individual the genealogist is seeking. Eventually, perhaps all of the manuscript census will be transcribed in this way, which will be a boon to genealogical research on a larger scale. In Illinois, scholars from the Newberry Library and the state's genealogical groups are cooperating in an effort to record the entire population of the state as noted in the 1850 and 1860 federal censuses.¹⁸ Considering the amount of future labor savings, the costs of even a huge project like this are reasonable by most researchers' standards.

THE manuscript population censuses have so far proven to be the most widely used source of quantitative historical data, but they form just one category of an ever-increasing field of such information. Other sources include the extensive birth, death, and baptismal records available in church archives around the state. Many such records have been microfilmed; others await such treatment. These vital statistics are the foundation of an entire discipline known as demographic history, which is booming in England, France, and certain parts of the United States, notably New England.¹⁹ No one has yet undertaken an Iowa history project using such material.

Other important sources of information, which would be suited to studies in economic history, are city directories and state business directories. These commercial gazetteers list names, addresses, and—in some cases—trade territories in a sys-

¹⁸Richard Jensen, address to the Mid-America Conference on History, Western Illinois University, Macomb, Illinois, October 1977.

¹⁹A representative work in this field is Philip J. Greven, Jr., *Four Generations: Population, Land, and Family in Colonial Andover, Massachusetts* (Ithaca: Cornell University Press, 1970).

tematic manner. They could be used in histories that seek to describe commercial development, business enterprise, or social geography in specific communities or in the state as a whole.²⁰

Municipal offices typically house extensive collections of building permits and similar sources of information that document the physical growth of communities. Such information has been used in computer projects by several historians in other states to provide definitive analyses of the nature of local growth, particularly in the years since 1880.²¹ Also of great potential value are hospital and public health statistics, probably the best sources of data on the nature and quality of health care in Iowa's past. These statistics, too, have apparently never been used in research in Iowa history.²² Other sources with interesting possibilities are directories of medical practitioners; some of these books are already in the collection of the State Historical Society.

County and municipal records—of courts, public agencies, and social service departments—offer new avenues of historical exploration. Recent surveys of holdings in the state's courthouses provide an important first step toward what promises to be a rich lode of historical data. In the area of educational history, most school districts store historically important documents. Researchers from the Newberry Library several years ago completed a very sophisticated statistical study of the history of public education in Iowa in the years from 1880 to 1930 using data drawn from these local records. For Catholic schools, the state's chancery offices probably house similar information. And the University of Iowa Library collects some college and university records from around the state.²³

²⁰ See Michael P. Conzen, "Metropolitan Dominance in the American Midwest during the Later Nineteenth Century," (Ph.D. dissertation, University of Wisconsin, 1972).

²¹ See Sam Bass Warner, Jr., *Streetcar Suburbs: The Process of Growth in Boston, 1870-1900* (Cambridge, MA:Harvard University Press, 1962).

²² Gerald N. Grob, *The State and the Mentally Ill: The History of the Worcester State Hospital in Massachusetts, 1830-1920* (Chapel Hill:University of North Carolina Press, 1966).

²³ Richard Jensen and Mark W. Friedberger, "Education and Social Structure: An Historical Study of Iowa, 1870-1930," Newberry Library, Chicago.

Agricultural records have already been mentioned in connection with the work of Robert Swierenga and Allan Bogue. There is an abundance of such material at the state, county, and community level, awaiting the kind of systematic analysis demonstrated by the Iowa scholars. Finally, documents related to past politics—voter registration lists, poll tax lists, rosters of party members, and so on—are available at the State Historical Society and elsewhere.

Material from each of these categories has been used in historical studies already, of course. But the development of new analytical methods and the advance of computer technology offer the means for a more rigorous analysis of Iowa's population, its communities, and its social institutions.

The goal of history is an understanding of life in the past. Historians who use documents such as diaries, letters, memoirs, and other literary materials are capable of exploring only certain elements of history, which we may refer to as the "personal" past. Traditional historiography must inevitably have regard for this point of view valid or invalid. Such history shares much with other types of literature. It has story and character and color, for example. The grass-roots history proposed two decades ago by Samuel Hays attempts to approach the life of the past from another angle, to take these personal lives, these "points of view," and to set them in an explicit context of votes, jobs, prices, and migrations—to name a few factors. Hays's behavioral ideas are based on the conviction that the observers in the past were as fallible in their perception of personalities and events as we are today. As historians, we must look beyond their words, to see what they did as well as what they said they did. The danger in all this, of course, is that quantitative data, used without more "personal" written documents, will be made to replace feelings, ideas, and opinions; in other words, that the pendulum will swing too far away from the insights that can be gained from the written word. Whatever we risk in this regard, however, the greater danger lies in ignorance. Quantitative methods and computer research are not for everyone, but in recent decades those who find it valuable and exciting have more than justified its use with the contributions they have made to our knowledge of Iowa's history.

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