

Quantification and the “New” History: A Review Essay

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DURING THE LAST FIFTEEN OR MORE YEARS, much has been made of new, quantitative approaches to the study of the past. For a time, quantification was a subject of some controversy, occasionally heated, among historians. The more aggressive advocates of quantification promised that its use in historical investigation would have a revitalizing and revolutionary impact, one that would move historical studies beyond the impressionistic and episodic and would produce more reliable, more respectable, and more relevant knowledge of the past. There was some effort, perhaps in the interest of conferring legitimacy, to demonstrate that even great American historians of earlier years made use of quantitative methods and materials in their work. On the other side, critics were equally certain that quantification would dehumanize history, sacrifice the rich variety of the past, and produce works devoid of interest value or genuine understanding.

Although disagreements remain, controversy concerning the use of quantification in historical studies is now largely a thing of the past. An occasional curmudgeonly voice is still raised to inveigh against virtually any use of numbers by historians beyond pagination and the recording of dates, but a large and steadily growing body of completed work testifies to the widespread use of quantitative materials in the investigation of historical phenomena. Indeed, the number of books and articles that make use of quantification, more or less extensively, precludes anything approaching comprehensive citation.¹

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¹ A number of published collections provide useful samplings of this work and reflect the application of quantification to virtually every subfield of history, ranging from economic through social and political and even including some forms of intellectual history. See, for example, William O. Aydelotte, Allan G. Bogue, and Robert W. Fogel, eds., *The Dimensions of Quantitative Research in History* (Princeton, New Jersey:

Also, a literature of criticism and commentary has appeared describing the new interests and questions that students of the past are pursuing, calling attention to the resources that are needed to pursue these interests and problems, and criticizing historical studies and advocating adoption of new orientations and assumptions.² Several available guides to statistics, computers, and quantitative methods place particular stress upon the nature and peculiarities of quantitative historical data and research and upon the special statistical and computational problems which these characteristics present.³

Other developments have occurred. The graduate curricula in history at many universities have been modified by the addition of courses and seminars in quantitative methods. In a number of cases, proficiency in statistics can be submitted in partial satisfaction of foreign language requirements for advanced degrees. Historiography courses frequently deal with the accomplishments, problems, and prospects of quantitative work. Numerous conferences and symposia concerned in one way or another with quantitative studies have been held, and summer training programs in quantitative methods

Princeton University Press, 1972); Jerome M. Clubb and Howard W. Allen, eds., *Electoral Change and Stability in American Political History* (New York: The Free Press, 1971); Robert W. Fogel and Stanley L. Engerman, eds., *The Reinterpretation of American Economic History* (New York: Harper and Row, 1971); F. R. Hodson, D. G. Kendall and P. Tautu, eds., *Mathematics in the Archaeological and Historical Sciences* (Chicago: Aldine-Atherton, Inc., 1971); Donald N. McCloskey, ed., *Essays on a Mature Economy: Britain after 1840* (Princeton, N.J.: Princeton University Press, 1971); Don Karl Rowney and James Q. Graham, Jr., eds., *Quantitative History: Selected Readings in the Quantitative Analysis of Historical Data* (Homewood, Ill.: The Dorsey Press, 1969); Joel H. Silbey and Samuel T. McSeveney, eds., *Voters, Parties, and Elections: Quantitative Essays in the History of American Popular Voting Behavior* (Lexington, Mass.: Xerox College Publishing, 1972); Robert P. Swierenga, ed., *Quantification in American History Theory and Research* (New York: Atheneum, 1970); Stephen Thernstrom and Richard Sennett, eds., *Nineteenth Century Cities: Essays in the New Urban History* (New Haven: Yale University Press, 1969).

² See, for example, William O. Aydelotte, *Quantification in History* (Reading, Mass.: Addison-Wesley, 1971); Lee Benson, *Toward the Scientific Study of History: Selected Essays* (Philadelphia: J. B. Lippincott Co., 1972); Robert F. Berkhofer, Jr., *A Behavioral Approach to Historical Analysis* (New York: The Free Press, 1969); Allan G. Bogue, ed., "Emerging Theoretical Models in Social and Political History," *American Behavioral Scientist* 16 (June 1973), entire; Felix Gilbert and Stephen R. Graubard, eds., *Historical Studies Today* (New York: W. W. Norton and Company, Inc., 1972); David S. Landes, Charles Tilly, et al., *History as Social Science* (Englewood Cliffs, N.J.: Prentice-Hall, 1971); Murray G. Murphy, *Our Knowledge of the Historical Past* (New York: Bobbs-Merrill, 1973).

³ Charles M. Doller and Richard Jensen, *Historian's Guide to Statistics* (New York: Rinehart and Winston, 1971); Roderick Floud, *An Introduction to Quantitative Methods for Historians* (Princeton, N.J.: Princeton University Press, 1973); and Edward Shorter, *The Historian and the Computer: A Practical Guide* (Englewood Cliffs, N.J.: Prentice-Hall, 1971). See also *Computers in History and Political Science*, IBM Manual GE20-0390-0 (White Plains, N.Y.: IBM Corporation, 1972), prepared by Jerome M. Clubb, Erik W. Austin, and Michael W. Traugott.

and approaches to historical studies have been sponsored by various groups and organizations. Effort has been directed to the development and dissemination to scholars of major collections of computer-readable historical research data and of specialized computer programs for analysis and manipulation of such data.⁴ A number of relatively new journals and newsletters now being published are particularly receptive to quantitative work and, more generally, to work that involves new approaches to the study of the past.⁵

The Dimensions of the Past is a major addition to the literature of quantitative history.⁶ The volume includes thirteen chapters, each concerned with a different area or time period and written by recognized experts. Two of the chapters deal with medieval and early modern Europe; two treat modern France; and others are devoted to Spain, the Nordic countries, modern Germany, Great Britain, Russia, colonial Latin America, nineteenth- and twentieth-century Latin America, Japan, and India. In preparing their essays, the authors were invited to consider the quantitative materials available for the various nations and time periods, to describe past use of these materials and problems encountered in their use, and to suggest areas and opportunities for additional work. The authors appear to have

⁴ Indications of these latter activities are provided by *S S Data: Newsletter of Social Science Archival Acquisitions*, 1971–, of the Laboratory for Political Research, The University of Iowa; and *Social Science Information*, 1962–, published by the International Social Science Council, Paris, France. For the holdings of machine-readable historical data and the related activities of one social science data archive, see the *Guide to Resources and Services*, published annually by the Inter-university Consortium for Political Research (P.O. Box 1248, Ann Arbor, Mich., 48106).

⁵ See, for example, *Comparative Studies in Society and History*, 1958– (The Hague); *Computers and the Humanities*, 1966– (Flushing, New York); *Explorations in Economic History*, 1969– (Kent, Ohio); *The Family in Historical Perspective*, 1972– (Chicago); *Historical Methods Newsletter: Quantitative Analysis of Social, Economic and Political Development*, 1968– (Pittsburgh); *Journal of Interdisciplinary History*, 1969– (Cambridge, Mass.); and *Journal of Social History*, 1967– (Berkeley, Cal.).

⁶ Val R. Lorwin and Jacob M. Price, eds., *The Dimensions of the Past: Materials, Problems, and Opportunities for Quantitative Work in History* (New Haven and London: Yale University Press, 1972). The individual chapter titles and authors are David Herlihy, "Quantification and the Middle Ages"; David S. Landes, "Statistics as a Source for the History of Economic Development in Western Europe: The Protostatistical Era"; Charley Tilly, "Quantification in History, As Seen from France"; Louise Tilly, "Materials of the Quantitative History of France Since 1789"; Juan J. Linz, "Five Centuries of Spanish History: Quantification and Comparison"; Brigitta Oden, "Historical Statistics in the Nordic Countries"; James J. Sheehan, "Quantification in the Study of Modern German Social and Political History"; William O. Aydelotte, "A Data Archive for Modern British Political History"; Arcadius Kahan, "Quantitative Data for the Study of Russian History"; John J. TePaske, "Quantification in Latin American Colonial History"; William Paul McGreevey, "Quantitative Research in Latin American History of the Nineteenth and Twentieth Centuries"; Kozo Yamamuro and Susan B. Hanley, "Quantitative Data for Japanese Economic History"; and Morris David Morris, "Quantitative Resources for the Study of Indian History."

carried out these suggestions admirably, although substantial expertise would be required to assess effectively the adequacy of the several essays. Even so, the extensive references to research reports, guides, and data sources provided either in voluminous footnotes or in extended bibliographies appended to many of the chapters are probably in themselves of sufficient value to justify publication of the volume.

The essays by Charles Tilly and William O. Aydelotte involve at least partial deviations from the general pattern of the other chapters and require special comment. In his chapter, Tilly suggests something of the rationale for quantification in historical studies, delves more deeply into matters of method, and provides much in the way of practical "how-to-do-it" information based upon his own work and experience. Although focused upon France, the chapter is of considerably broader interest and value. The chapter by Aydelotte is, in effect, a proposal for the creation of an archive of computer-readable, political data for Great Britain. That archive would be modeled, insofar as practical, after the computer-readable collections of nineteenth- and twentieth-century election returns, legislative voting data, and social and economic data for the United States developed under the auspices of the Inter-university Consortium for Political Research.⁷ Aydelotte's proposal suggests the kinds of research resources potentially available to historians as a consequence of computer technology and indicates the magnitude of resources that are needed to support adequately and to facilitate quantitative historical research. His chapter may also suggest, at least indirectly, some of the broader archival implications of quantification in history.

Although each of the authors has managed to convey a remarkable wealth of information in a short space, the areal, temporal, and substantive coverage provided by the volume is less than comprehensive. The fact is understandable; comprehensive coverage would have required a reference shelf rather than a single volume, and selectivity was obviously necessary. Many readers will, of course, be disappointed that areas of particular individual interest were omitted. From some perspectives, for example, the deliberate omission of the United States from consideration may seem unfortunate in view of the extensive quantitative work in American history that has been carried out. Taken in total, the volume places heaviest emphasis upon economic history. The list of contributors suggests that well over half of the authors have specialties in economic history, and several of the essays limit their consideration to research and resources in

⁷ For a description of the consortium historical data projects, see Jerome M. Clubb, "Historical Politics: American Elections, 1824-1970," *Social Science Research Council Items* 25 (December 1971): 46-50.

that area. Again, such an emphasis is understandable. All substantive areas of history could not be given equal treatment in a volume of this size, and economic history has the longest tradition of quantification and has developed the most sophisticated methodology. On the other hand, this emphasis results in some neglect of research, data resources, and problems in other fields of history which perhaps stand in greater need of introductory information and stimulation than does economic history.

It is impossible to indicate briefly the rich and valuable information which the various chapters provide. Suffice it to say that the book will undoubtedly stand long as a basic and necessary reference tool for those who seek to apply quantitative approaches to the study of the past. Read closely enough, moreover, the introduction and the various chapters convey much of the nature and diversity of the research orientations and interests that are frequently lumped together under the heading of quantitative history. Indeed, from the beginning, quantification has been among historians a kind of catch-all term referring not only to the use of quantitative methods and materials, computers and other electronic and mechanical tools, but also to a variety of approaches to historical research and to divergent views of the nature and appropriate goals of historical studies. These include interest in historical processes and phenomena, such as demographic change and structure and role of the family, usually neglected by historians; emphasis upon systematic comparisons across time periods, cultures, and nations; effort to apply to history techniques and concepts borrowed from the social sciences; interest in the construction and use of abstract mathematical models of societal processes; and concern for the development and testing of explanatory and predictive theory. Although historians may employ quantitative methods and materials in their work, they are far from united in these latter issues. Here again, however, it is possible to suggest only a few of the differences and similarities that are characteristic of quantitative history and which are reflected in the present volume.

In the first place, it is apparent that no particular set of historical research problems can be singled out as uniquely quantitative in nature. Indeed, the diversity of problems that have been approached quantitatively, and of the topics that the contributors to *The Dimensions of the Past* note as fruitful opportunities for quantitative inquiry, clearly suggests that the decision whether or not to apply quantitative methods usually does not depend upon the nature of the topic or even the characteristics of available source material. Rather, that decision depends primarily upon the preferences, interests, and ingenuity of the researcher. Quantitative techniques

have been employed in the investigation of a wide variety of long-standing historical problems including, to note but a few examples, such issues as the role of the frontier in American history, the sources of support for reform movements and for particular public policies, and the mass and elite bases of revolutionary movements. It is probably fair to say, however, that the most striking and, in some ways, the most controversial contributions achieved through quantification have come in two areas. The first, at least in terms of methodological rigor and sophistication, has been economic history and has involved an intimate union of economic theory, measurement, and statistical methods that is sometimes labeled "cliometrics." That union has produced new knowledge of processes of economic growth and development, particularly in the American case. It has also resulted in a heavily deductive, highly abstract, and mathematically complex form of history strikingly different from that history to which most readers and scholars are accustomed.⁸ The second major contribution of quantitative investigation in history, although more general and less well developed conceptually and methodologically, has been to knowledge of mass behavior and characteristics. Numerous studies in such areas as social structure and mobility, popular political behavior, and demographic phenomena have marked a shift away from the primary concern with the few of power and position, long a hallmark of historical studies. In these terms, far from "dehumanizing" history, quantification has brought new knowledge of the conditions, the way of life, and the aspirations of ordinary men and women of the past who were formerly neglected by historians.

While *The Dimensions of the Past* well illustrates the diversity of quantitative investigations in history, it also provides abundant warnings against thoughtless and indiscriminate quantification, and the contributors caution in numerous ways that the simple marshaling of numbers is unlikely to contribute significantly to historical knowledge. Such warnings are justified, for quantification in history has been marked by much unsophisticated number-gathering that has illuminated little. Yet these warnings apparently have different implications for the various contributors. For some they signify the need for a continuing and, it may be, a primary reliance upon the methods of more conventional historical scholarship. This is perhaps the meaning of the editors' warning that "most large historical

⁸ Useful brief descriptions of the new economic history are provided in Robert William Fogel, "The New Economic History: Its Findings and Methods," in Fogel and Engerman, eds., *The Reinterpretation of American Economic History*, pp. 1-12; and in Peter D. McClelland, "Model Building in the New Economic History," *American Behavioral Scientist*, pp. 631-51.

problems—even those which best lend themselves to quantitative approaches—are rarely solved by quantification alone. Nonquantitative materials and judgments are almost always needed to explain the forces behind the trends in a time series, the accidents that account for fluctuations, the logic manifest in a correlation.”⁹ For others, such warnings seem to imply the need for more sophisticated methods that are closely geared to the concepts and problems of concern, for more subtle conceptualization of problems, and for more explicit and better theories and hypotheses.

These apparent differences merit serious consideration, because they suggest deeper differences of orientation and interest that exist among writers who employ quantification and that bear upon the nature and goals of historical studies. For most historians, quantification is no more than an additional tool for the pursuit of long-standing historical interests. Quantitative methods and materials facilitate more precise and more comprehensive description of past phenomena, they allow investigation of problems that could not be effectively explored through the use of more conventional sources and methods, and they provide a means to capture better the rich diversity of past reality. The use of these tools, however, involves little, if any, departure from the humanistic view that the variety and even accidental nature of human affairs precludes significant generalization and that, in the long run, empathy remains the primary means to genuine understanding of the past. Viewed in this perspective, it means little to speak of quantification as involving a new form of history.

At the opposite extreme are those who find in quantification a tool for the identification of regularities and uniformities in human behavior and for the development and verification of theoretical knowledge. Charles Tilly captures the point when he suggests that the quantification of historical problems can lead “quite outside history” and that historians and other students of the past can find themselves “in that timeless realm in which situations, persons, or events plucked from the past or the present serve as tests of general statements about social life.”¹⁰ In these terms, it is possible to speak of a new “social scientific” history diverging sharply from the history of the classic historians or the textbooks. Outside the domain of economic history as practiced by “cliometricians,” this new history is not yet well developed, although some of its directions are clear.¹¹ It is

⁹ Lorwin and Price, *Dimensions of the Past*, p. 10.

¹⁰ *Ibid.*, p. 108.

¹¹ The nature and directions of these new approaches to history are best suggested by the various essays included in *American Behavioral Scientist* 16 (June 1973).

a history to which nonhistorians have already contributed mightily. Here again, *The Dimensions of the Past* suggests the point, for the primary disciplinary affiliations of several of the contributors are economics and sociology rather than history. A central focus of this new history is explicit hypotheses and testing, refinement, and development of theories of human behavior and social processes. Reliance is placed less upon genetic forms of explanation and instead is placed increasingly upon modes of explanation and verification common to the sciences, or, more precisely, upon explanations of the "covering law" form.¹² It is likely that in the future the narrative mode of exposition will be employed less frequently, and, if the work of "cliometricians" is a guide, the new history will involve a level of deductive and mathematical reasoning, inference, and presentation that is incomprehensible for the untutored.

This is not to say, of course, that all historians will, or should, adopt these new directions. It would be unfortunate, indeed, if that were to occur. These new directions and modes of inquiry are geared to values and goals different from those served by traditional historical scholarship, and they provide different satisfactions. It is to say, however, that the use of quantitative methods and materials is not peculiarly appropriate to any particular conception of history or to any particular view of the nature of human affairs. Quantitative techniques have been employed by "consensus," "conflict," "radical," "humanistic," and "social scientific" historians alike, and the techniques are essentially neutral in the disagreements between these and other schools. And given the power and convenience of modern computers, the increasing availability of quantitative and quantifiable source materials, and the continuing development of new and more subtle methods, it can be reasonably predicted that quantification will increase steadily among historians of all persuasions.

While major differences can be observed among students of the past who employ quantitative methods, significant common points can be noted also, the most obvious being those bearing upon data and data sources. *The Dimensions of the Past* abundantly demonstrates that historians have underestimated the amount of quantitative and quantifiable source material available for the study of even the remote past. David Herlihy in his chapter observes that the scarce records and the artifacts of the early Middle Ages have provided a basis for quantitative work, and it can be added that fruitful use of quantification has been made in archaeology, ancient history,

¹² See C. G. Hempel, "The Function of General Laws in History," in Patrick Gardiner, ed., *Theories of History* (Glencoe, Ill.: The Free Press, 1959); and Murphey, *Our Knowledge of the Historical Past*.

and, for that matter, pre-history.¹³ The various chapters demonstrate also the ubiquity of problems confronted in the use of quantitative historical materials. Extended and consistent time-series are of critical importance to quantitative research, but most investigations confront interrupted series which no amount of grubbing in the sources can complete. Thus reliance must often be placed upon risky interpolation procedures. Problems of error and bias are constant, straining the traditional mechanics of source criticism. Indeed, considerable effort has been directed to developing techniques for estimating bias and error margins and for assessing their likely effects upon findings.¹⁴ It is rarely—in some senses, never—the case that the available historical data are precisely appropriate to the problems at hand. All too frequently, extant data are recorded at an excessively high level of aggregation, and complex and undependable inferences must be made to the level of smaller units or individuals. Information bearing directly upon the process or phenomena of concern is often not to be found, and reliance must be placed upon indicators measuring that process or phenomenon only indirectly. As a consequence, complex structures of inference are necessary. Adequate information as to original modes of data collection and compilation is often lacking, and the purposes and assumptions which underlay these activities are unknown. Most investigators have encountered shifts in data series that could indicate changes in production patterns, in levels of popular participation in political life, or in the incidence of violence and unrest but that also could reflect no more than undocumented changes in original data collection or compilation procedures.

In the main, these are problems common to all historical inquiry, but they are seriously aggravated where quantitative research with its goals of precise measurement is concerned. This is not to suggest, as has sometimes been argued, that the frailties of historical data preclude application of complex statistical techniques. If anything, the reverse is the case; the very inadequacies of historical materials dictate more complex and more sophisticated statistical techniques than are required for more perfect data. And much can be done to alleviate these and related problems. More—and more adequate—quantitative and quantifiable historical source materials can be found; better estimation and interpolation procedures can be developed; compilations and machine-readable files of the most reliable historical data can be created; and much more can be learned of the

¹³ See Hodson et al., eds., *Mathematics in the Archaeological and Historical Sciences*.

¹⁴ See Raoul Naroll, *Data Quality Control: A New Research Technique* (New York: The Free Press, 1970).

purposes and circumstances that led to the original collection and preservation of historical data series. But the ameliorative effects of such efforts will be limited. Neither archivists nor historians can create information that was never recorded or recreate information that was once recorded but destroyed. Historical research, after all, is limited ultimately to the source material that actually exists. Thus it may be profitable to ask what, if any, implications the scholarly trends and interests reflected in this volume have for archival practices and for the future directions of historical inquiry.

It is commonplace to observe that electronic information technology has stimulated a massive increase in the volume of information that is produced, recorded, and stored, and in the range of human activities routinely documented. Little imagination is required to recognize that only the beginning of the so-called information explosion has been reached. Consequently, it is possible to envision for the future a veritable historian's paradise of almost unlimited source material. It is obvious, however, that not all of the information that is now being produced can be preserved. Even if preserved, moreover, its great volume would preclude effective scholarly use, although the computer has greatly increased the quantity of source material that the individual scholar can manipulate and digest effectively. The trends and interests noted above suggest the kinds of source materials that historians are likely to value and emphasize in the future.

Letter collections, diaries, governmental reports, speeches, and other conventional sources continue to be mainstays of historical research. In growing numbers, however, historians are seeking to go behind these sources to examine past economic, social, and political reality from the ground up; and it is perhaps worth noting that these interests are increasingly shared by economists, political scientists, sociologists, and other social scientists concerned with contemporary human affairs. These interests place new emphasis upon detailed records which describe the activities and characteristics of ordinary men and women and of elite-group members and which capture the essentially routine activities and transactions of governments, business firms, and other organizations. These interests also imply preference for raw as opposed to processed information, for information at the individual level rather than aggregated summaries, for the component variables from which summary indexes were derived rather than the summary indexes themselves. It is not that summary aggregates and indexes are unimportant; it is rather that raw information is more flexible. Given individual-level information and component variables, aggregation can always be carried out, and in-

dexes can always be derived. Given only aggregates and indexes, there is no way to return to individual-level information or to extract component variables. Particularly where quantitative information is concerned, these new interests dictate the need for preservation of detailed documentation describing information collection and processing procedures and conveying the assumptions upon which these procedures were based.

Archivists have other obligations besides those to historians. Archivists are, however, the custodians of societal records, and their decisions will play, as they have in the past, a critical role in determining the nature and adequacy of the historical knowledge that is developed and of the histories that are written. The trends and interests reflected in the present volume and written large across the literature of quantitative history merit careful consideration. Quantification combined with the new and varied source materials now being produced promises for the future rich new knowledge of human affairs. The combination presents challenges to the archival profession: changing assessments of the historical value of particular categories of records and managing and maintaining new types and forms of source materials. Whether or not these promises can be realized will depend heavily upon the response of archivists to these new challenges.