

Power to the computers: A revolution in history?

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The first stage in the process of modernizing the historian's intellectual technology is over. No longer is the True Believer's claim to methodological superiority through the computer met by the Luddite's petulant insistence that the most important questions are important precisely because they cannot be quantified.¹ Like the fountain pen and the typewriter before it, the computer is now accepted as a tool that can make a historian's life more pleasant and more productive. The question to be resolved in the next phase of the process is whether the forces activated by the increasing use of computers will or should, either through a sociological dislocation in the profession or a methodological reorientation of the craft, work a revolution in the way history is written. Will the New History be a social science?

The issue has not been squarely faced as yet. When C. Vann Woodward, one of the more genial of the skeptical humanists, recently sought to calm and rally the counterrevolutionary forces he pointed reassuringly to the common humanistic origins of History and the social sciences and suggested that in order to defend this heritage "a small cadre should definitely be armed with all the weapons, trained in all the techniques, and schooled in the ideology of the invaders."² This is not the rhetoric of reconciliation, but neither is it a call for a *Kulturkampf*. It is instead an assertion of the belief that because History is not one of the social sciences, historians may borrow from them without capitulating to them, a belief shared by Woodward and an impressive cohort of practicing historians: R. R. Palmer, J. H. Hexter, David M. Potter, Richard Hofstadter and H. Stuart Hughes among others. One suspects that the premise of this confidently resilient response is that "far from being revolutionized by new techniques, transformed beyond recognition, or swallowed up by the social sciences, much the greater part of history as written in the United States has remained obstinately, almost imperviously traditional."³

The premise is valid. Computers and the methodological strain toward quantification have not yet altered the way historians go about their work. In the first place, the historians were consciously quantifying even without computers. The classical quantitative study of violence during the French Revolution was done in 1935,⁴ and one of the most impressive pieces of recent scholarship, *The Crisis of the Aristocracy* by Lawrence Stone, uses a host of noncomputerized numerical measurements of social behavior to demonstrate the existence of a crisis in the affairs of the elite that led to the fact that the English aristocracy in the early 17th century experienced a marked decline in prestige and deference. The author infers from this that the collapse of the authority of the peerage underlies the coming of the English Civil War.⁵ Large, old questions can be answered by numbers even without the aid of computers.

This is not to argue that computers are unnecessary. The information contained in the Massachusetts ship registry for the years 1697–1714 remained locked there until the computer and a willing programmer combined to make it available and easily manipulable in tabular form. Then simple but important questions could be answered, and historians now may state with greater confidence that even at the end of the seventeenth century the Massachusetts shipping industry was geographically dispersed and socially diffused.⁶ The myth of American opportunity had some basis in fact.

Examples of the usefulness of computers may be drawn from all of the areas into which computers have made incursions. One of the most promising yet underexploited fields is historical demography, in which the computer is a near necessity because massive amounts of data must be manipulated in order to get significant answers. The most sophisticated work has been done in European history without the aid of computers, but Herbert Guttman and Laurence A. Glasco mechanized census data for their forthcoming study of the related

question of black family structure in nineteenth century American cities and found a great deal more stability than Daniel Moynihan would have predicted.⁷ In the similarly related and highly developed area of social mobility studies, Stephan Thernstrom used computers to process census data for Newburyport, Massachusetts, over a period in the mid-nineteenth century and concluded that even though there was not enough occupational mobility to justify the rags-to-riches myth, there was an impressive amount of upward mobility of blue-collar families if property accumulation were used as the criterion.⁸ The interesting thing about this example of computer employment, for present purposes, is that Thernstrom was using familiar sorts of data in a more rigorous way to find answers to questions historians had been dealing with for some time.

Historians have realized for a long time that the study of political behavior demanded quantitative techniques. As early as 1896 Orin Libby called upon American historians for close analysis of Congressional voting behavior, and he set an early example in the area of electoral behavior with his study of the geographical distribution of the vote on the ratification of the Constitution in 1787-88.⁹ The age of computers has stimulated a leap in the quantity of quantification but only a small increment so far in the level of sophistication of the analyses.¹⁰ Thomas Alexander and his associates used simple correlation analysis of beat returns with measures of socio-economic status in Alabama to construct the most convincing argument so far that the American Whigs in the 1830s and 1840s were not a class party.¹¹ Stanley Parsons employed slightly more advanced multiple correlation techniques on similar data to demonstrate that there is little substance to the conventional wisdom that Populism and mortgage indebtedness in the 1890s in Nebraska went hand-in-hand.¹² Intercorrelations of election returns over a long period of time revealed that critics who found the source of Joe McCarthyism in mass democracy were incorrect in supposing that McCarthy's support in Wisconsin came from the same elements of the population that had supported Populism in the 1890s.¹³ Sheldon Hackney resorted to cluster-bloc analysis to identify four different groups representing different sets of political values in the Alabama Constitutional Convention of 1901 and then used these as categories around which to organize subsequent political developments in the state.¹⁴ Guttman scaling is another popular method being used by political historians. With it, Joel Silbey was able to demonstrate that sectional conflict in the 1840s and 1850s did not replace national party rivalry as the principal dimension of Congressional politics.¹⁵ With the accumulation

of data archives and standard programs by the Inter-University Consortium for Political Research at Ann Arbor and the increasing mathematical competence among historians being stimulated by the Mathematics Social Science Board, there could be a leap in both the quantity and quality of political history in the near future.

Social behavior other than in the realm of politics is also being quantified and analyzed profitably with the aid of computers. Multiple correlation analysis using a dummy variable, applied to social and economic variables and homicide and suicide statistics, has disclosed that there is a non-quantifiable cultural component associated with the high rates of individual violence in the American South so that regional differentials cannot be explained totally by differences in rurality, poverty, and generally lower levels of modernization.¹⁶ Charles Tilly, a sociologist who uses history as his laboratory, is altering conventional assumptions about the process of urbanization through a massive study of collective violence in France in the nineteenth and twentieth centuries.¹⁷ Similarly, Michael Katz has used factor analysis and other techniques with a wide assortment of data to establish a positive correlation between urban growth and educational reform in nineteenth century Massachusetts, and has developed a set of hypotheses consistent with this finding. Educational reform, he argues, was not undertaken in response to the pressure of upward aspiring lower orders; it was the result of a coalition of upper status groups each pursuing slightly different but temporarily compatible goals so that the creation of high schools can best be considered as a reform sponsored by elite groups to provide social control in a situation of rapid modernization from which they were profiting.

Collective biography offers another approach to historical problems that historians are just beginning to systematically exploit with the aid of the computer and the creation of a central data bank at Princeton University. The leader in this endeavor is Theodore K. Rabb whose extensive analysis of 5,184 investors in seventeenth century English trading ventures firmly established the fact that the landed gentry in England supported imperial enterprise and industry to a unique extent.¹⁹ Ralph Wooseter's massive analysis of the membership of secession conventions in the southern states in 1860-61 confirms the notion that slaveholders were in control of at least this stage of the secession movement.²⁰ Collective biographies need not always confirm existing interpretations, however. When Norman Wilensky constructed social profiles of a large sample of Republican Party activists in 1912, he discovered that stand-pat Republicans did not differ significantly from progressive Republicans in any social

characteristic other than age, and this cast great doubt on the Mowry-Hofstadter notion that one of the main sources of progressive leadership was downwardly mobile elites.²¹ Even so, it is apparent that, thus far, computer-aided quantified biographical studies are testing hypotheses and answering questions long familiar to more traditional methods of historical scholarship. Computerized collective biography represents only an extension of these more traditional techniques.

The field of History that comes closest to having undergone the sort of transformation that the study of economics experienced with the development of econometrics is, quite naturally, economic history.²² In this area, as in the others, the computer is not the only force making for changes in technique, for there is also a marked adventurousness in the use of concepts and models borrowed from the social sciences and in the conscious construction and testing of hypotheses. Such theorizing in History as in pure math or theoretical physics does not depend on the availability of powerful computers. Even without computers we would still today find traditional modes of economic history, such as business and labor history, being surpassed in importance by quantitative analyses of economic systems based on highly articulated theoretical constructs. The two best examples of the new economic history are the debate over the profitability of slavery rekindled by Alfred Conrad and John Meyer²³ and the argument between Albert Fishlow and Robert Fogel about the importance of railroads to American economic growth in the nineteenth century.²⁴ But both of these cases, as important as they are, represent attempts at more precise measurements and theoretical assumptions involved in answering big questions that historians had been dealing with for years. Even in the most advanced branch of cliometrics, the revolution is incomplete.

Because of the arrested state of change, all but the grumpiest humanists tend now to overlook the methodological peculiarities of the computerized upstarts and to content themselves with the thought that history is not a social science. They argue at times that historians are not interested in formulating general laws, Arnold Toynbee to the contrary notwithstanding. They insist that historians are not concerned with the regularities of human behavior but with particular and unique events. Some humanists would even like to establish the axiom that social scientists are interested in discovering general rules of human behavior and historians are interested in the exceptions. But on examination this turns out to be a faulty argument. Only the antiquarian is fascinated with the artifacts, events, modes of life, and personalities of the past for their own sake.

Historians seek to establish interrelationships, and interrelationships imply causal connections. Even when historians are not consciously doing social science in the sense of making and testing hypotheses concerning the relationship of two or more variables, they are dealing with such hypotheses, usually as unconscious assumptions or rejected explanations. Imagine how a historian's explanation of an event would fare if the causal conditions he points to appeared nowhere else in human experience in conjunction with events similar to the one he is attempting to explain. All history is at least implicitly comparative, and what is comparison if it is not hypothesis testing?

A fundamentally more sound objection is the conviction of many historians that more forces are at work in a given situation than can possibly be reconstructed and abstracted by the scholar. Even though we need to explain only the most important of the causes, and not all of them, these scholars believe that truth may be more closely approached by the narration of the story, reflecting the historicist belief that stopping the flow of history does violence to understanding. Historians share with humanists the habit of leaving much of the job of understanding to the reader and providing him with a superfluity of facts which he can fit into his own scheme. The humanities depend to a great extent on a shared culture, and books written for one audience are not necessarily understood by another audience. For instance, the hero of William Styron's novel, *The Confessions of Nat Turner*, was intended by the author and is understood by most white readers to be an existential hero striking out against oppression in the face of incredible odds. Black readers, because of their different definition of the attributes of manhood, interpret Styron's Nat Turner as an insult to the race because he is made to appear weak, ineffectual, indecisive, and neurotic. The only way to close the gap in understanding is to discuss why the fictional Nat Turner acted as he did in certain situations and whether this behavior is consistent with what we know of Turner's biography, the situation, and human behavior in general. Understanding, for the historian as for the social scientist, is finding the answers to a set of "why" questions.

There is no essential sense in which History differs from the social sciences.²⁵ Though historians still think of themselves as belonging to a literary craft, they do not usually confuse beauty and truth as Lord Byron did. For this reason, though no great change has yet occurred in the kinds of questions historians ask, one must not assume that the revolution will never come.²⁶ The pressure toward further change is evident in the *Historical Methods Newsletter* whose focus on quantitative methodology testifies to a new orientation and

whose book reviews frequently, and correctly, charge authors with not squeezing enough out of the analytical tools available to them. Under the new orientation, the historian should not stop his analysis after he has answered the question that led him to adopt the quantitative technique, but he should push on until the possibilities of the technique and the data have been exhausted. Depending on one's point of view, this approach produces either unwanted knowledge or a strikingly new level of analysis. So, the principal dichotomy is no longer between social science oriented revolutionaries and humanistic traditionalists, but between those historians who view the computer as a tool to be used only to the extent that it is useful in answering previously determined questions and those who advocate total immersion in computer and quantitative techniques in hopes that completely different kinds of questions will eventually be posed and answered.

Now is the time to stop and think carefully about the likely consequences should the total immersionists triumph. Is there something about the study of history that would be destroyed by applying the research strategies of the social sciences? There may well be.

Even though historians and social scientists strive for the same kind of understanding, historians retain from their humanistic past certain work habits that are important. Historians are usually specialists in particular times and places, not in problems or techniques. Even specialists in urban, economic, social, or political history tend to focus their interests on particular geographic locations and chronological periods. They attempt to understand the particular event in relation to the general rules, rather than trying to derive the general from the particular, and they have an imprecise faith that, as Pirenne said, "to construct history is to narrate it." It may be an absurd myth to believe that historical truth depends upon a holistic approach, or that the whole is greater than the sum of its parts, but it is a useful myth. Because historians believe that truth emerges from the complete context, they seek to synthesize all of the pieces. Because they proceed as they do, they are likely to discover that some previously unsuspected factors are pertinent to a particular problem, and they are more likely to provide information useful to a future scholar with a different set of concerns.

This picture of the myth of historical truth is reflected in the present caste structure of the profession. The generalists rule and the technicians execute. How a cliometrical revolution would affect this structure is an interesting question. Generalists probably would still dominate the profession, but there would be a difference. Only those synthesizers well versed enough

in the new techniques to be able to understand and judge the reliability of the work of the technical specialists could survive. That would be a clear gain. But what if it became true that the only historical scholarship admired and respected were computer-aided quantification because that is the only sort of scholarship that provides neat answers to generalized hypotheses. That would be a tragedy, for we would lose the habit of relating different areas of human endeavor to each other, the habit of syntactical analysis.

If historians can learn from the history of other disciplines that have undergone methodological revolutions, they will leapfrog over the next stage in their revolution, the stage during which so much attention is paid to methodology that little productive energy is expended in advancing the understanding of the substance of history. No contribution to any field can be made by scholars not steeped in the substance of it. Even some of the most methodologically oriented of the new breed are discovering the usefulness of traditional methods. As Robert Zernsky has recently warned, quantitative techniques can yield answers no better than the measurements on which they rest and the only way for the quantifier to avoid misuse of the measurements is to understand the record through traditional approaches.²⁷

We need to arrive quickly at that point in the development of the discipline at which methodology is no longer the central issue. Then, techniques will neither be damned because they are new nor pursued for their own sake. New techniques are more likely to be generated by new questions than new questions are to be created as a byproduct of new techniques. It would be a mistake for traditionalists to assume that there is such a great difference between social science and History that there is a limit to the change that can be wrought by the quantifiers, and it would be an even greater error for the quantifiers to assume that there would be little lost should they accomplish their revolution in the work habits of historians.

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