Political Methodology - A Welcoming Discipline

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1 Introduction

While empirical political science can be dated as far back as Aristotle, and some of the earliest work in statistics was about political methodology (e.g., Petty, 1690), the self-definition of political science as a science probably only goes back a century or so (with a convenient dating being the founding of a "scientific" department at Columbia University). Political methodology is a young subfield within political science. The coming of age of that subfield is best evidenced by the arrival of the journal, *Political Methodology*, now named *Political Analysis*. By that dating, the subfield of political methodology is about twenty five years old.

While there were serious quantitative political analyses in the 19th and early 20th Centuries (Gow, 1985), the increased use of quantitative analysis went hand-in-hand with the post-World War II "behavioral revolution" in political science (Dahl, 1961). The behavioralists were employing more and more sophisticated methods, though few, if any, behavioralists would have labelled themselves as "methodologists." The most sophisticated behavioralists acquired their methodological training from other disciplines (first sociology, later economics) and usually did not teach courses in methodology to pass on their sophistication to their graduate students. But starting some time in the late 1960's we did begin to develop a small cadre of people who did at least a portion of their scholarship as methodologists.

Chris Achen (1985), in his final editorial for *Political Methodology* summed up the situation as follows: "when [*Political Methodology*] began in the mid-1970s, methodology was more often an avocation than a vocation. No political science journal welcomed methodological articles, and many journals rejected them out of hand. Certainly no Political Methodology Society existed to give shape and organization to the needs of political methodologists. In the face of these difficulties, John Sullivan and George Marcus created Political Methodology.... By [the 1980's] the field had come of age, and the rapid development of the last few years were possible."

In this essay I look at, from my own perspective, a few major features of this burgeoning of political methodology and how they might play out in the early part of the new millennium. In particular, I look at the relationship of political methodology to other social science disciplines and to statistics. I then look at the changing nature of data collection.

2 Political methodology and other social sciences

Political Science as a discipline is substantively, not methodologically, defined. Political scientists use a variety of methods to attack questions related to political institutions and behavior. While the methodological issues are defined by our political questions, we freely use whatever methodological solutions are available. Thus political methodology has freely drawn on insights from econometrics, psychometrics, sociology and statistics. One clear trend, however, is our increased reliance on our own methodological expertise

Quantitative political analysis in the 1950's and early 1960's was largely the analysis of contingency tables. By the 1960's path analysis, imported from sociology, was becoming the state of the art. By the 1970's multiple regression had become (and still is) the dominant tool, and political methodology turned more and more to econometrics for its basic tools (and to econometricians for basic training).[1]

While political methodologists were always a diverse lot, the modal political methodologist looked a lot like an applied econometrician (and had received advanced training by taking the econometrics sequence at top departments). With the ease of use of modern software, we have seen a decreasing lag between the introduction of a new method in econometrics and its use in political science. Thus political science articles now routinely have citations to state of the art econometrics papers in such area as time series analysis, the analysis of choice (and other limited dependent variable methods) and the analysis of duration data.

While it might be tempting to belittle political methodology in the 1970's and 1980's as a "borrowing" discipline, a fairer assessment would be that it was a "welcoming" discipline. Given its substantive political orientation, political methodology has always been willing to import methods, so long as those methods contributed to our understanding of political phenomena. Starting in the 1980's, political science departments even began to hire econometricians (and a few statisticians) to be full-time department members. But these econometricians were judged on how they solved political science problems, not the prettiness of their econometrics.

As political methodologists have become better trained, we are now creating as well as borrowing solutions. The best example of this is the ecological inference problem. Ecological inference is one of the oldest political methodology problems in existence: how can we used data observed only on geographic groups to make inferences about individual level behavior. The

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[1]For reviews of the political methodology subfield, see Achen (1983), Bartels and Brady (1993) or King (1991).

first use of regression in political science was an attempt to solve this problem to see whether men and women voted differently in Portland, Oregon (Ogburn and Goltra, 1919). This study used precinct level data on voting and gender to assess whether women voted differently than man, an issue of great interest in 1919 with the 19th Amendment to the Constitution about to come into effect. Political scientists have always had plentiful ecological data, and have long searched for methods to allow them to use such data to assess questions of interest.

The use of ecological data declined with the publication of Robinson's (1950) classic article showing that correlating ecological data did not yield good estimates of the underlying individual correlations. But the Voting Rights Act, which demanded analyses of turnout and vote by race, brought a resurgence of interest in ecological inference. Unfortunately, the leading technique for analysis, Goodman's (1953) regression, was known to produce incorrect individual level estimates. Goodman himself warned against the use of his technique unless certain unrealistic assumptions were met. But in spite of this, the Supreme Court endorsed Goodman's method as the only acceptable method of assessing the relationship of race to turnout and vote. Thus by the 1980's the search for a good way to do ecological inference was on.

While scholars from many disciplines made contributions, the penultimate solution was by two political scientists, Chris Achen and Phil Shively (1995). Their contribution was soon overtaken by that of another political scientist, Gary King (1998). It is only fitting that political scientists are now in the forefront of solving what has been the oldest problem in political methodology. The solutions to the ecological inference problem have led to an enormous amount of new work being done, in which political scientists have used the work of their methodological colleagues to study important issues in voting behavior. From all appearances, the method proposed by King seems to yield good estimates of individual level parameters, and also provides diagnostics for when the method will fail. While the method is not without its detractors (Freedman, Klein, Ostland and Roberts, 1988), its use by political scientists in investigating a variety of electoral outcomes does seem to validate its applicability to a wide range of data. It is only fitting that political methodologists solved the oldest problem in political methodology.

While the solution to the ecological inference problem has drawn the most notice, political scientists have also developed techniques for using roll-call data to measure legislature's ideal points (Bradey, 1991; Londregan, 2000;

Poole and Rosenthal, 1996), to analyze voting data in mutliparty systems (Katz and King, 1999) and assess fairness in legislative redistricting (Gelman and King, 1990, 1994a,b; Grofman, 1990).

My own work has also moved in this direction. Econometricians and biometricians have shown how to analyze longitudinal data, that is (a small number of) repeated observations on a (large) sample of individuals. But political scientists are often concerned with analyzing time series–cross section data on a small number of countries over a long span of time. These data may show temporal and spatial dependence. But the units are fixed and not sampled, so many of the issues which econometricians and biometricians focused on are irrelevant; conversely, the political data shows unique features, namely some form of spatial autocorrelation. To make matters more complicated, many analyses in international relations use a binary dependent variable (war or no war). Rather than simply import the inappropriate but known methods from econometrics and biometrics, a methodology for estimating the types of models encountered in studies of comparative politics and international relations was developed (Beck and Katz, 1995; Beck, Katz and Tucker, 1998). Political science datasets from comparative politics and international relations are different than datasets from epidemiology, so it makes sense that they should be analyzed using different methods, and the appropriate methods for the political datasets should be studied by political methodologists.

Political methodology has done more than come up with appropriate techniques for analyzing political data. We have also been actively involved in looking at the underlying unity of political research. Much of political research, particularly in comparative politics, is inherently qualitative. Early work in political methodology more or less ignored those doing qualitative work, leaving qualitative analysts ignorant about issues of inference. But a recent and welcome trend is for political methodologists to show that the underlying logic of research does not depend on whether it is qualitative or quantitative, and that both are subject to the same methodological issues, and particularly the issue of sampling and case selection (Geddes, 1990; King, Keohane and Verba, 1994). Much of political science is qualitative, but it is still science, and it is good that political methodologists are taking seriously the methodological problems faced by qualitative analysts. One consequence of this is that the last few years have seen explosive growth in first-rate scientific studies of comparative politics, be they quantitative or qualitative.

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3 Political Methodology and Statistics

While political methodology is creating methods to solve political problems, it still remains a welcoming discipline, drawing heavily on allied disciplines, primarily econometrics. There is a heartening tendency for political methodology to also be drawing more heavily on modern statistical methods. The uneasy relationship between political methodology and discipline of statistics is not accidental. To oversimply, statisticians work hard to get the data to speak whereas political scientists (and econometricians) are more interested in testing theory (and hence more interested in whether a model parameter is large or small rather than the exact relationship between a dependent and independent variable). Much of statistics is data driven; political methodology is theory driven.

Thus, while political methodologists *may* use exploratory data analysis or modern graphical methods in the initial analysis of their data, such analysis does not show up in the relevant journal articles. I say "may" because I have little evidence that political scientists spend a lot of time on exploratory data analysis. This is partly a matter of a training, but also due to our lack of interest in the nuances of the data (as opposed to ascertaining its gross features).

Modern statistics has influenced political methodology in a few ways. Perhaps the most heartening recent innovation has been the acceptance of Bayesian ideas without the theological wrangling that has often accompanied those ideas. Thus King's breakthrough on ecological analysis was at least partly a function of his use of random parameter models (Rubin, 1981), where the parameters for any given aggregate unit are drawn from some common distribution (as opposed to the Goodman method, which assumed a single, fixed, parameter for all units). This Bayesian notion, combined with some other features of the data (the bounds) allowed King to provide meaningful estimates.

The random parameter model will also hopefully solve some of the thornier problems in comparative politics. Students of comparative politics have typically assumed that all units are incomparable, and hence done case studies, or have made the opposite assumption and assumed that all units followed the same underlying process, and hence used simple regression models. But, as Western (1998) showed, the random parameter (or hierarchical) model provides a very nice compromise between these two extreme positions. Countries may differ, but the parameters pertaining to a given country all reflect draws from a common distribution.

While both of these methods are Bayesian, both use relatively unin-

formative priors and have proved quite acceptable to the typical classicist political methodologist. It appears that the debate between classicists and Bayesians may be much more severe when it comes to first principles than to actual applications. While political methodology still follows classical rather than Bayesian principals, we have become more at ease in thinking about "posterior" distributions, even if we tend not to call them that. We have also become more at ease with using Bayesian ideas such as simulation to determine confidence intervals of parameters of interest (Herron, 2000; King, Tomz and Wittenberg, 1998) or to using Bayesian tools such as Markov Chain Monte Carlo (Smith, 1998).

At the same time, political methodologist are drawing more and more on the small sample work of statisticians. Thus while maximum likelihood based standard errors are probably still the norm, we are seeing a greater use of bootstrapping and related methods. While much of political methodology is content to follow econometrics interest in asymptotic theory's elegance, more and more political methodologists are becoming concerned with the small sample properties of estimators. And we are also becoming better able, through Monte Carlo analysis, to see when asymptotic results apply to the kinds of data we actually observe. Thus, in Beck and Katz (1995), it was shown that with time-series–cross-section data that asymptotically correct (GLS) standard errors could be off by a factor of two or three even with "sample" sizes of 300 or more.

Political methodologists have been loathe to abandon the simplicity of the linear model; again, this is due at least as much to the nature of our theoretical interests as to our unwillingness to master new and complicated technique. But even if we are not interested in every nuance of the relationship between y and x, the assumption of linearity still may be a bit strong. Beck and Jackman (1998) tried to convince political scientists that they could improve on their work by starting with Hastie and Tibshirani's (1990) Generalized Additive Model rather than the more ubiquitous generalized linear model. Alas, while I believe that the Generalized Additive Model nicely combines flexibility and simplicity, so far I have seen almost no political analyses using that model. But one can hope, and it probably takes more than a year for new ideas to permeate any discipline. But there is no question that political methodologists are turning more and more to modern statistics to help them solve political methodology problems.

4 Data

As important as analysis is, no field is better than its data. Political methodology has been at the forefront of data collection and data dissemination. The Interuniversity Consortium for Political Research (now the ICPSR, Social was added later) was founded in 1962 at the University of Michigan. The ICPSR's mission was to archive and disseminate data sets that could be used by all researchers. Long before the World Wide Web made data dissemination easy, the ICPSR housed an enormous archive of data that was made available to all political scientists. The youngest graduate student had access to the same data as the most veteran researcher.

Since the 1950's, the single most used data source in political science has been the National Election Study's survey conducted for each Presidential and Congressional Election (often with a panel component). This data was collected according to the highest standards, with political diverse political methodologists having input into the design of the study. By having a common source of data, political methodologists could attack research questions without worrying about whether different findings might be a result of different survey methods, or worse, of inferior survey methods.

While this high quality and publicly available data allowed for advances in the discipline, it also imposed a certain uniformity. Political methodologists have quickly taken advantage of modern advances in computer assisted telephone (CAT) interviewing to allow us to answer questions that could never have been answered before. But, drawing on the lessons of the ICPSR, we have continued to make sure that this type of data is available to all researchers.

CAT has made it cheaper for individual researchers to conduct their own surveys. Since we still have the National Election Study, we have a gold standard to compare the individualized work to. But the CAT system allows for researchers to more flexibly study topics of interest; flexibility is hardly the strong point of the National Election Study. These individual studies have allowed us to hone our understanding of the survey response (Feldman and Zaller, 1992). The best analysis of survey responses that we do not understand will never get us very far; innovative work on what respondents are doing when they answer survey questions is vital to the future of political methodology.

This future will almost certainly involve survey experiments, a design only made possible by CAT. Survey experiments have greatly expanded the scope of our studies, and promise to join the rigor of the experiment with the relevance of the field study (Sniderman, Brody and Tetlock, 1991). Thus,

for example Johnston, Blais, Brady and Crete (1992) were able to convincingly demonstrate via survey experiment that the Liberals in Canada had a rhetorical advantage early in the campaign, but that the Conservatives effectively countered this over the course of the campaign. Political persuasion is a critical topic in political science. We are only now beginning to study this in the laboratory. But to be able to do field experiments on persuasion allows us to move the argument from the sterile laboratory to the study of ongoing political processes.

The CAT system also allows for a variety of different researchers to piggyback on the same basic study; each researcher gets a few minutes of interview time to pursue his or her own experiment with a common set of background data available to all investigators. This strategy has been pursued by the Multi-investigator Study financed by the NSF and has led to a series of exciting papers (e.g., Sniderman, Piazza and Harvey, 1998) which make full use of the field experiment approach. Innovations in telecommunications will make possible more innovations in data collection. Hopefully political methodology will continue to take advantage of those innovations.

5   Conclusion

The past quarter century has seen political methodology come into its own. Political science data shares some commonality with other types of data, and so it is appropriate that political methodologists learn from other methodological disciplines. But our data also has some unique properties, so it is critical that political methodologists analyze and solve the problems that characterize political datasets.

The year 2000 shows that we have come far. Since Achen wrote his editorial in 1985, the subfield of political methodology has flourished. A small summer meeting in 1984 of about a dozen scholars at the University of Michigan has become an annual event attended by over 100 faculty and graduate students. Political Methodology has become one of the five largest organized section in the American Political Science Association; this section publishes the quarterly journal, *Political Analysis*. Scholars can now publish methodological articles not only in *Political Analysis* but also in all of the leading disciplinary journals. Departments now advertise for methodologists and all major departments have faculty whose principle graduate teaching is devoted to methodology. A good substantively trained graduate student will know much more methodology than the most sophisticated methodologists of 1980.

The challenge comes in continuing to be open to new methods, particularly related to the intensive computer analysis of datasets. The cutting edge of political methodologists have shown themselves to be open to such innovations but it remains to be seen if they will be successful in importing such methods into general research.

The first such challenge we will face in the next millenium is a sensible treatment of missing data. Political methdologists have ignored that problem until very recently, but some recent breakthroughs (King, Honaker, Joseph and Scheve, 1998; Little and Rubin, 1987) make it possible that all political scientists can improve their treatment of missing data. The two cites show an interesting relationship between statisticians and political methodologists. The statistical work, while mathematically persuasive, had literally no impact on political science practice. But the political science work, building on the earlier statistical work, clearly showed political scientists how inefficient their practices were, and how ignoring missing data led to incorrect inferences in important substantive arenas. Equally importantly, the work by the political methodologists promises to provide a practical solution that can be employed by almost any political scientist with missing data. Political methodology is happy to import methods (and scholars) from other disciplines, but those idea have to be shown to solve important problems in political science.

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