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Urban Geography: Three Reviews

Swain, H. and MacKinnon, R.D.

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Since it takes several months for journal reviews to be published, we are circulating three recently prepared ones to interested colleagues in IIASA. This working paper contains:

The Urban Future. Ely Chinoy (ed.)
Lieber - Atherton, New York, 1973. viii and 179 pp.

The "Atherton Controversy" series is intended to juxtapose and resolve contrasting views in some topical field, and to give a lay or undergraduate reader a sense of the state of the art therein. This slim volume of eight essays fails on both counts.

Chinoy's introductory section presents a once-over-lightly catalog of trends on the U.S. urban scene which is adequate as far as it goes, but omits any synthesis or weighting. Herman Kahn's various books present many of the same ideas more cogently. There follows a series of four essays on the evolution of large and relatively formless urban regions (and cultures), a notion familiar to geographers for several decades. Jean Gottmann contributes a graceful piece on "The Rising Demand for Urban Amenities", Nathan Glazer looks with wondering eastern eyes at Southern California, and there are concluding essays on race and violence.

Glazer's "Notes on Southern California" encapsulate the reasons for the failure of this book to live up to its title. Like the rest of the contributions, it was originally published elsewhere some years ago; in fact, all but a short excerpt from the National Commission on the Causes and Prevention of Violence (1969) date from 1957 to 1966. For a volume of prospectives, this is simply not good enough. Indeed, Glazer's 1959 article now has a slightly antique air. It

brings home the immense gulf between then and now, the historical density of the intervening years. He reports, for instance, that "a Jew cannot buy a house in La Jolla today" (p. 126), and forecasts that the new university campus will end this prejudiced exclusion. He dares to approve of Californian architecture--but Tom Wolfe said it better and much more outrageously in his essay on Las Vegas almost a decade later. He has a nagging worry about the resource expenditure needed to maintain the car culture.

The futures predicted in this book are now mostly history.

Harry Swain,
International Institute for Applied Systems Analysis,
Laxenburg, Austria.

Land Use, Urban and Environmental Quality, BRIAN J. L. BERRY, ANDREW J. BRUZEWICZ, DOUGLAS B. CARGO, JAMES B. CUMMINGS, DONALD C. DAHMANN, PETER G. GOHEEN, CHARLES P. KAPLAN, DOROTHY B. KOOPMAN, RICHARD F. LAMB, LEE F. MARGERUM, MARVIN W. MIKESELL, DAVID J. MORGAN, JACK P. MROWKA, JOHN P. PICCININNI, and JUDITH A. SOISSON, Research Paper No. 155, Department of Geography, University of Chicago, 1974. xxiii + 440pp.; tables, figures, maps, bibliography; paper, $5.00.

GOVERNMENTS ARE increasingly contracting with university teams to perform policy research. Characteristically, the criteria by which the purchasers evaluate the project include not merely the scholarly virtues held dear by readers of this journal, but also the timeliness, comprehensiveness, communicability, and policy relevance of the result. Deadlines and the diminishing marginal utility of depth on sub-parts of a broad problem demand the use of a coordinated team of specialists, which in turn requires tight project management of a sort not widely diffused in universities. These added requirements are not always appreciated by the academic performers of contract research, or their peers, leading to frictions of several sorts. When they are, the final result is often denigrated by the disciplinary doyens, and even by some who earnestly promote

the practical importance of their subject at budget time.

Geography is no novice at the game of applications, though as a discipline we are more accustomed to granting arrangements than the stricter contract route. There is every indication that the growth sector in external funding is the contract. Judged as contracted policy research, how does this hefty volume by a team of Chicago geographers stack up? While a proper answer would demand privileged information about the preferences and policy development opportunities of the U.S. Environmental Protection Agency's Office of Research and Development, an educated guess is possible.

First, the conclusions--and any good piece of policy research ought to lead with its chin, as few decision-makers will read further--are a disappointment, for they point to no clear and easy routes to the solution of the sponsoring agency's problems. After 410 pages of diverse and detailed analyses, it is concluded that the "core-oriented urban region with a radial transportation network and a steep density gradient...has superior air and water quality to...the dispersed urban region..." (p.413). But dispersion is the key dynamic of the time, which must mean that rational families and firms experience other benefits more than compensating for these negative environmental externalities. (Possibilities of severely bounded rationalities or systematically non-global optimizing behaviour in an

imperfect world are not discussed.) Nor, for well-known reasons, is massive Federal intervention in a coherent urban policy framework likely in the near future. Improving environmental quality by the purposive manipulation of land use and built form flies in the face of powerful and pervasive societal tends. In the view of the authors, "radical changes in attitudes are required, involving nothing less than a new land ethic, if national environmental policy is to be promoted by changed directions of urban development." (p.430).

These gloomy truths will likely disappoint ambitious bureaucrats. However, they are based on a truly comprehensive synthesis of materials on a wide range of topics, and cannot easily be cast aside. It is sometimes said that there are two classes of people in the world, those who make policy and those who endure it. Prof. Berry and his colleagues may have saved the latter from some of the more facile kinds of error already perpetrated by environmental policy makers.

Examining the rest of the book, one is struck by how well the organizers met several of the criteria of good policy research. This large team has produced a logically ordered and consistently well written catalogue of evidence in a mere fifteen months. It may be that a single author would have produced a more readable document, but certainly not with that breadth in that time.

A detailed table of contents (there is no index) outlines the argument. Following a general problem statement and a moderately restrained recital of the virtues of geography, pollution measures for air, water, solid waste, noise, pesticides and radiation are assessed, monitoring systems discussed, and current results presented. The gross inadequacies of present pollution surveillance systems are noted. The third part contains the bulk of the analysis. Seventy-six U.S. urban regions are grouped by Q-mode factor analysis on the one hand, and sets of environmental quality measures on the other, yielding the unsurprising conclusion that big manufacturing cities are in worse shape than small, service-oriented ones. Subsequently regression analyses controlled for size and economic base demonstrate unequivocally the more interesting point noted above: urban form does have an independent effect on environmental quality. Perhaps the most interesting and provocative chapter (11) sets the environmental quality measures in a general context, a discussion of the (dis)-economies of urban size, with per capita property values being the clamp for encompassing effects of all sorts. Much more could have been done to develop the ideas skated over here, but again the authors have opted--properly, in the circumstances--for roughly equal depth over a broad range.

Considered as policy research, the only major failing of this

volume is in the presentation of its conclusions, which paradoxically contains an analysis of Voorhees, but in which by no means all of the previous analyses are reflected. There should have been, for instance, a consolidated list of recommendations on pollution surveillance systems. The general assertion that nothing short of apocalyptic value change will work is probably overdrawn. For geographers of all stripes, though, there is interest aplenty. Though some will no doubt shudder at the compressional violence done to their specialties, others will appreciate seeing them set within a systematic and meaningful context. Teachers at all levels will have a compendium of basic urban environmental information nowhere else available. All will be stimulated by a host of unresolved research problems.

[HARRY SWAIN

International Institute for Applied Systems Analysis,

Laxenburg, Austria]

Review of A. G. Wilson,

Urban and Regional Models in Geography and Planning,

London: Wiley, 1974. p.418.

The latest Wilson book is certainly a valuable addition to the literature on urban model building. It represents a serious attempt to take stock of spatial interaction and location models, and to integrate them into a coherent set of procedures. The book is clearly written, and, in spite of some rather intimidating mathematical notation, attempts to accommodate the reader with a limited mathematical background. In fact, questions of derivation which can be extremely important to the understanding of models, are frequently not even identified and seldom investigated in any detail. The book often, therefore, comes dangerously close to becoming a "cook book"--perhaps the most advanced cook book we have in geography, but a cook book nevertheless.

The structure of the book is straightforward and easy to follow. Part I describes the roles of models in the urban planning process, presents the author's objectives, and incidentally some of his biases. Part II includes a fine example of how to construct a simple model demonstrating how inconsistencies may arise and how they

can be overcome. Disappointingly, the entropy maximizing rationale for this and the models to follow, is relegated to an appendix. Part III, by far the largest and most important section, surveys demographic models (cohort survival and migration), "economic models" (input-output), transport models (almost exclusively of the gravity type), and location models (land use distribution). Next, an ambitious effort is made to link these models together in large comprehensive frameworks. The efforts of others (Lowry, Penn-Jersey, but very surprisingly not the NBER model) are surveyed and Wilson goes on to develop his own framework. Part III concludes with a chapter on calibration and testing problems. Finally, Part IV presents two interesting, but all too brief, empirical applications of Wilson's modelling strategies, a brief description of plan evaluation problems, and some summary comments about the major modelling problems which have yet to be resolved.

The book is, then, a rather impressive performance, covering a wide range of problems and attempting to do it in an integrated way. It does not therefore, suffer from many of the shortcomings which frequently characterize surveys in quantitative geography. In spite of this, (in fact perhaps because of this), the scope of the presentations is certainly not as wide nor as rich as the author would seem to indicate in his statement of objectives or in the book's

title itself. The book is in fact a highly personal statement on urban modelling. Models which do not fit well with the framework Wilson uses, are either mentioned only in passing or ignored completely. It is a bit disturbing to have only models discussed "whose 'style' is most closely in accord with the rest of the book". The criteria for inclusion is in large degree implicit and rather ad hoc.

The large class of optimization-normative models, is excluded on both pragmatic and semantic grounds. Mathematical programming solutions to the commodity flow problem are not considered, allegedly because the required level of data disaggregations is often prohibitive. In spite of this difficulty, there are in the literature many examples of the applications of such methods. Moreover, the data requirements of some of Wilson's more disaggregated models are even more awesome. Even more curiously, normative models are excluded because in Wilson's terms they are not "models"--a component of plan design rather than analysis. While terms may be defined in anyway one chooses, this exclusion by definition would appear to be needlessly devious.

Another large class of models which have been virtually ignored are those concerned with stochastic processes. Thus Markovian models of urban change, Monte Carlo simulation models, and the large literature on stochastic point processes are all excluded without any explicit justification.

Behavioral approaches, while recognized by Wilson as extremely important, are essentially omitted because only a macro viewpoint is to be adopted. Desaggregation is invariably achieved by introducing additional subscripts, a rather mechanistic procedure to incorporate a behavioral apporach.

For reasons that are not altogether clear, supply-oriented urban models concerned with the physical stock of urban structure, are also excluded from consideration.

Wilson's overriding objective is "...to present, in an integrated way, a body of theory on cities and regions." Moreover, the approach is to be "hypotheticodeductive" rather than "inductive". The reviewer has neither the capability nor the inclination to discuss in any detail, the distinction between theories and models and related matters of the philosophy of science; it would seem, however, that this book is concerned more with models of cities and regions, rather than theories. The form of the models' components is often postulated at the outset, and much of the analysis deals with how these components can be fitted together while maintaining an overall consistency. This is rather different than starting with a few very simple first principles, and deriving results which were not immediately obvious. There is little in the way of fundamental theory presented in the book of the utility on maximum entropy type, for example. It

is a book on mathematical models which may be based on some theory, but such bases are not well developed in the book. Mathematical analysis is used largely to identify and correct for inconsistencies in models, and to present the output of models in slightly novel, and perhaps more readily interpretable forms.

The models are frequently developed rather loosely, and by analogy. In addition, there are several model components in which one variable is postulated to be equal to a linear combination of, "...a number of variables which characterize region i". Similarly, "...the main task of the (trip) distribution modeller will be to get the distance attenuation function....in a sound form. It is possible to test a range of functions and a range of values of β." There are many instances of ad hoc or pragmatic approaches to modelling, where the only justification of a function or a method is that empirically it seems to work well. These cases would seem to throw some doubt on the claim that a purely theoretical, deductive approach has been adopted. In fact, recent developments in urban theory by economists and geographers, is given virtually no notice. Somewhat causally, Wilson states that his spatial interaction models are not inconsistent with economic models. While this may be true, their relationship between these two types of models has not been made clear.

In a book which ultimately must have its greatest appeal to planners concerned with numerical models, it is disappointing that more space has not been devoted to examples of empirical analyses. There are pages and pages of equations, which are frequently repetitive and to a considerable extent, represent different combinations and extensions of two or three basic models. This reviewer would have prefered a longer presentation of the problems of calibration and more detailed empirical results. Chapters 12 and 14, are certainly inadequate in this regard. Wilson's acceptance of R^2 and χ^2 as adequate measures of goodness of fit, is a bit disturbing for a geographer. R^2 values of .95 while seemingly quite impressive, may mask very poor performance of a model with respect to certain spatial zones. For flow models in particular, there may be a very good fit for all pairs of smaller zones, while the fit may be exceedingly poor for the few large, and presumably most important, zones. Moreover, for both flow and location models, the spatial pattern of residuals is as important to the geographer as the overall goodness of fit measure. Finally, the consequences of using iterative-search calibration methods on the performance to the model, have not been investigated adequately. In empirical applications, the imposition of many constraints on the problem (e.g., origin and destination sums), can result in a relationship between trips and "distance", which is markedly different from the negative exponential (or power function) form of the ana-

lytical model.

In addition to these major comments, there are the inevitable minor criticisms. In an attempt to appeal to the non-mathematical reader for example, matrix inversion is introduced as "matrix division". A rather curious typology of modelling techniques is presented (pp. 173-176), the elements of which are neither exhaustive nor mutually exclusive. Also odd, is the claim that his models are more deductive, and presumably more desirable, than the Quandt-Baumol transportation demand models. He fails to note that their models are ultimately based on a rather deductive utility theory framework, and the calibration methods they use (least squares), are much more fully tested and interpretable, than the iterative-search methods used in Wilson's type of models.

In conclusion then, this is the work of an important innovator in urban modelling, which everyone with a serious interest in the subject, should read. It would be suitable as a text for an upper division undergraduate course, or a graduate course. It is, however, an unrepresentative text--one which would have to be supplemented with other readings stressing other points-of-view.

Ross D. MacKinnon
University of Toronto