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# Book Reviews

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*Systems Simulation for Regional Analysis:  
An Application to River-Basin Planning*

By H. R. Hamilton, S. E. Goldstone, J. W. Milliman, A. G. Pugh III, E. B. Roberts, and A. Zellner. The Massachusetts Institute of Technology Press, Cambridge. 407 pages. 1969. \$15.

Public-spirited citizens have been suggesting for years that development of our natural resources is the means to attaining increased general business activity and an improved quality of life. In a paper presented before the Birmingham meeting of the British Association for the Advancement of Science in 1913, C. R. Enock maintained that the economic problems before the world called for a comprehensive and constructive science whose aim would be to evolve and teach the principles under which economic equilibrium in the life of communities might be attained. He asserted, by way of solution to the economic and social problem, that the congestion of the population in towns, the desertion of the countryside, the high cost of living, low wages, and unemployment are related phenomena, intimately connected with the conservation and development of natural resources.

During the past decade, analysts have continued to ask the same question, but are developing a different answer. An application to river-basin planning of a system simulation for regional analysis suggests that prospects for income and employment for residents of the Susquehanna River Basin are independent of natural resource development in the basin. Rather, appraisals of economic development in the 49-county area, covering parts of three States, are based on simulations of markets, transportation of products and materials, industrial organization, labor force participation, education, and migration patterns. The simulations reflect general business activity in each of nine functional economic subregions in the river basin. This book demonstrates the power of simulation models in comprehensive, multi-county area planning as an alternative to base studies, input-output, and linear programming.

Simulation has arrived, and readers of this journal must needs be familiar with its techniques.

The book was written by a committee of six as a report on the research of a larger committee of 15 whose members lived in different cities and who worked over an extended period of time. For the beginner and graduate student, your reviewer recommends chapters 3 and 4. Chapter 3 gives a concise and meaningful statement of what regional analysis is and why we need it. Chapter 4 reviews several recent regional analyses and compares their relative strengths and weaknesses. Chapter 2 doesn't have anything to do with the rest of the book, but makes interesting reading. It deals with the role of mathematics underlying economic theory as used by Cournot, Walras, Marshall, and others as a system of logic. But the committee did not use their mathematics that way. And it deals with the role of mathematics and statistics as used by the Cowles Commission and others as a system of estimating parameters for econometric models. But the committee did not get their parameters that way. Other chapters describe and explain the model, sometimes brilliantly and sometimes incoherently. The chapters often fail to relate either to each other or to the illustrative program listed in the appendix. This is taken by the reviewer to be a fault of the committee approach to book authorship rather than a reflection on the research stature of committee members.

The overall approach of the committee to the problem of economic development in a river basin is sound. They delineate the basin into functional economic areas. For each area they work out a detailed simulation of three sectors: Demographic, employment, and import/export. With these sectors linked together and behaving properly for each subregion, it then became a relatively easy matter to extend the model with an educational sector, requirements for water and other natural resources, prospective water pollution, and various

interregional relationships. Further extensions to reflect social goals, decision processes, and political and social institutional constraints might be incorporated in future versions of the model

The method of model construction used by the committee was far simpler than the micro-analytic approach suggested by Orcutt. Consequently the model is cheaper to run. To the extent that it reaches its goals, it is therefore more efficient. The committee worked with aggregates whereas Orcutt worked with individuals. For example, Orcutt keeps track of everyone's birthday every year; the committee moves one-sixth of the people aged 14 to 19 into the next age bracket with a single equation. Even with these shortcuts, the committee keeps track of far more detail than they find use for in their summaries of the system. One wonders if further efficiencies might be achieved with further aggregations without destroying the usefulness of the aggregative results.

The weakness of the simulation research derives not from difficulties in the overall approach but rather in the handling of some of the details. This is symptomatic of a common ailment among simulators. Simulations need not follow the mathematical beauty of the Walrasian system; parameters need not have the elegance of the maximum likelihood estimates of the Cowles Commission. Simulation models are patched together one equation at a time. If the logic is sound and the data reliable, then the simulation is useful. But in the interests of operationalism, one can easily incorporate dubious logic and shaky data. The user will have difficulty telling the difference simply by scanning a listing of the computer program. For example, the treatment of migration in the model appears to be entirely inadequate and misleading while some of the equations for handling exports show a spark of genius. But when converted to DYNAMO language and listed in an appendix, they all look equally impressive.

Researchers already interested in applications of simulation to multicounty development planning will want to be aware of this book and will find parts of it helpful to them in suggesting not only meaningful ways to build some subsectors of a model but also pitfalls to avoid in building other subsectors. Other researchers

need to be aware of the importance of the problem tackled by the committee and of the approach used, but this may not be the best book from which to learn.

Clark Edwards

### *The Agrarian Transition in America*

By Wayne C. Rohrer and Louis H. Douglas. The Bobbs-Merrill Company, Inc., Indianapolis-New York, 197 pages, 1969. \$8.

Rohrer and Douglas, a span of scholarly professors from Kansas State University, have created a book which carries a considerable impact. The prospects are that it will be read primarily by professors of agricultural economics and rural sociology and by graduate students in these disciplines. It is not a primer for beginners.

The authors take us on a guided tour along the sunlit paths, shady lanes, and dark defiles of agricultural development in this country with innumerable stops to present a capsule lecture or to sketch a fine-line vignette of incidents, organizations, and forces that had an impact on our agrarian transition. In this fashion, they narrate accounts of the "Agrarian Tradition," "Modern Agriculture and Organized Rural Life," "The Public Sector of Rural Life," and "Social Contexts of American Agriculture." A summary chapter titled "Conclusions and Interpretations" is followed by an appendage dealing with "Foreign Adventures of United States Agriculture."

At the outset Rohrer and Douglas legitimize the origins of the agrarian concept by citing Jefferson's familiar statements concerning "rules for the good society." The authors agree that in a nation where the vast majority of the population was on farms or shortly removed, it was understandable that the notion prevailed that "the farmer pays for all," that his work was noble, and that the farm was the homesite of virtue. The thing of continuing astonishment to them is the persistence and pervasiveness of the agrarian myth. Despite the surge of industrialization and the corollary decline of the agricultural sector, the agrarian dream remains. Rohrer and Douglas account for this phenomenon by recording its acceptance and

interregional relationships. Further extensions to reflect social goals, decision processes, and political and social institutional constraints might be incorporated in future versions of the model

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support by nonfarm elements. Teachers, preachers, and politicians so inculcated the agrarian idea in myriad ways that even today legislation to aid the commercial farmer gets preferential treatment and almost everybody agrees that the "farm is a good place to raise a family."

The authors did not mention one very significant factor in the promotion of the agrarian theme and that was the role of artists such as George Durrie who painted nostalgic farm scenes idealizing country life. Such sentimental pictures were reproduced by Currier and Ives, hung in thousands of homes across the Nation, and are now collectors' items. However, if you are of the opinion that (1) the farmer is independent, (2) farming is our fundamental industry, and (3) the agricultural life is good and natural--the basic tenets of agrarianism--you may not relish this book. The authors have different ideas and make a persuasive case for their point of view. The agrarian concept is not only a myth, according to Rohrer and Douglas, but its widespread acceptance has been harmful in such areas as perpetuating obsolete farm and marketing practices, poor rural schools, inept local officials and State legislators, and in staving off reapportionment proposals.

The authors delineate two agricultural structures: (1) Commercial or "venture" agriculture and (2) low-income, part-time "refuge" agriculture. The former is depicted as enlightened, aggressive, and supported by "federal bureaus that are concerned with agricultural production problems, the commodity organizations, producers and marketing cooperatives, the American Farm Bureau, the bulk of the farm credit grantors, and a majority of the professional workers of the land-grant universities. . . [constituting] an aggregation of agencies and groups that regard the problems of commercial agriculture as the farm problem." As to the latter type of agriculture, Rohrer and Douglas state: "On the other hand, some social scientists of the land-grant system and of the federal government, the National Farmer's Union, some of the consumers cooperatives serving farmers, and probably a majority of the rural life officials of the religious denominations constitute the aggregation of agencies and groups who attend to the problems of the refugists." Thus we are confronted with two quite distinct societies: one affluent, and geared to a sophis-

ticated infrastructure, the other poverty-laden and with a relatively weak and uncoordinated support structure. The term "refuge agriculture" seems somewhat harsh and unfair for, as Rohrer and Douglas point out, whether such farmers "are refugists or trapped is a moot question." Perhaps, within the context of intellectual honesty, it is just as well to use the stark expression, although this reviewer recognizes that to refer to an illegitimate child as a "woodscolt" softens the reality without invalidating the fact. In any event, the void that exists in our dualistic agriculture is sharply revealed by Rohrer and Douglas and their presentation represents an important contribution to considerations of current and prospective rural problems.

The writers sense an urgency in solving the problems of refuge agriculture--"a paramount concern in America today"--that is not generally appreciated. They doubt that the three generations or so used in evolving an infrastructure for commercial agriculture will be allowed for the development of organizations, systems, and practices needed to relieve refuge agriculture. It is their judgment that it will take more than "'conversation' legislation" to meet the worsening situation. The authors have undergirded their statements with carefully contrived and judiciously used regional studies and statistical comparisons. The research palpably was done diligently and in depth. Anyone inclined to differ with the authors' major findings had better have his facts well in hand.

Rohrer and Douglas conclude with the hope "that this work will become a part of the social science fund of knowledge and that the total will be used by busy legislators, agency administrators, and social researchers." It seems to this reviewer that the authors' hope would have a better chance of achievement if they had restrained their bent for unusual words and complex sentences. It is not an easy book to read. In order to obtain an objective appraisal of the book's readability, a Fog Index was computed based on much more data than usual, 266 sentences and 5,138 words. A 10 percent random sample of the pages of text was selected, the average number of words per sentence derived, a count made of words of three syllables or more per 100 words and the sum of these multiplied by a constant factor. The result was a

Fog Index of 17, the highest recognized by the system. As a basis of comparison, the Atlantic Monthly has been rated at 12.

The use of the precise word can be a joy and it is expected that a book intended for an educated and knowledgeable audience will be couched in scholarly terms. In this instance, however, the objective of the publication has been blunted by an overuse of abstract terms. Other impediments to easy reading include irregular right-hand margins and the lack of paragraph indentations and distinct headings. These criticisms should not be allowed to obscure the fact that Rohrer and Douglas have written a useful book.

Emerson M. Brooks

*Measures of the Quality of Agricultural Credit: Technical Paper 19*

By George K. Brinegar and Lyle P. Fettig, National Bureau of Economic Research, New York, 51 pages, 1968, \$2.25.

Agricultural credit should be an object of extensive economic study, mainly because its history to date has been so checkered. This technical paper is the National Bureau's fifth publication on the quality of credit in a number of sectors of our economy; the study concentrates on the quality grading systems of the Production Credit Associations and the Federal Land Banks.

In essence the findings reveal that (1) there is a close relationship between credit ratings placed on loans by the PCA and the final disposition of these loans; (2) with respect to the Federal Land Bank loans, there is little connection between loan collateral groups and loan experience; and (3) the quality of credit offered at both the PCA and the Land Banks appears to have been declining since 1932.

Although the Brinegar-Fettig research project is primarily a methodological study and does not purport to evaluate a cross section of U.S. agricultural credit, it records valuable information about Federal farm lending agencies for analyzing secular trends in farm credit quality.

Jack Ben-Rubin

*Science and Technology in Developing Countries*

By Claire Nader and A. B. Zahlan, Cambridge University Press, 588 pages, 1969, \$16.

The title of this book is misleading; it might have more accurately read "Science and Technology in the Middle East." The format, however, is well expressed by the subtitle: "Proceedings of an international conference held [in December 1967] at the American University of Beirut."

Conference proceedings are usually a smorgasbord and this one is no exception. Although nominally divided into three main sections--"Links with National Goals," "Institutional and Organizational Resources," and "Aspects of a Support System; Impact of Cultural Factors"--the papers show no particular logical order or progression.

Altogether there are 24 articles, each with appended references and edited discussion. Most refer to individual nations. Only three are specifically devoted to agriculture (although others do touch on the subject): Afif I. Tannous, "Organizing Science and Technology for Agricultural Development"; Gordon H. Ward, "Integrating Research, Extension and Cooperatives for Agricultural Development"; and Edward A. Mason, "An Analysis of Nuclear Agro-Industrial Complexes."

Tannous covers a number of development questions in his paper, but I found his comments on agricultural education in the Middle East of special interest. He suggests that progress in this area has been slow: while the American University of Beirut (of which Tannous is a graduate) was established in 1866, a School of Agriculture was not established until 1950. Among the Middle Eastern nations, Egypt appears to be in the forefront.

Ward reviews, in part, professional staffing problems in the Middle East. He indicates that in one country, 16 Western-trained Ph.D.'s left the research department of the Ministry of Agriculture because they were unable to carry out research; they joined the Faculty of Agriculture at a local college only to find no budget for research. He notes that in some countries the administrative structure in extension provides little incentive to get into the field.



Mason's paper, while of particular relevance to the Middle East, is now somewhat dated. Readers interested in his subject might better start with the article by Marion Clawson and others on "Desalted Seawater for Agriculture: Is it Economic?" in the June 6, 1969, issue of *Science*.

Elsewhere, John L. Simmon notes that one of the problems of introducing labor-intensive technologies such as handicrafts and public works is that they "... do not sound like technologies associated with the 1960's." He suggests that afforestation projects are a particularly promising venture but acknowledges that "... the Gallup poll of development projects favors impressive dams."

In a similar vein, Claire Nader indicates that from 1962 to 1967, Pakistan spent 10 times as much money on nuclear research as on two of its major sources of foreign exchange: jute and fishery resources. He does on to add that Pakistan spends over \$100 million annually for foreign consultants, "a figure representing over 1% of its entire national income."

Aside from these papers, there are not many other articles which would be of interest to the general agricultural economist. If, however, one is faced with a bid to do scientific work in the Middle East, the book would be a useful background reference.

Dana G. Dalrymple

*The Agricultural Development of Mexico,  
Its Structure and Growth Since 1950*

By Eduardo L. Venezian and William K. Gamble. Frederick A. Praeger, New York. 281 pages. 1969. \$15.

This study of Mexico is the first of a series of benchmark studies of Latin American countries projected by the publisher. The data used are taken mostly from published materials in the Spanish language. The research was completed in 1966 and although there is some updating to 1968 in the text, there is no title in the bibliography with a date later than 1966. Works in English are notable by their absence.

For example, although a chapter is devoted to research, education, and extension, Stackman's "Campaigns Against Hunger" is not cited.

Every author has problems of organization. The organization of materials in this book follows the pattern of survey, exposition, and summary in separate chapters. This results in a great deal of overlapping and repetition. In general, the data presented are on a macro level. There are no examples of specific projects--such as colonization in the tropics or irrigation projects--although such case studies are cited in the bibliography.

This book is valuable as a reference work for its statistical data, much of which is not otherwise readily available in the English language. The two final chapters, which are devoted to factors limiting agricultural development in Mexico, alternative opportunities for agricultural development, and the author's conclusions, are particularly interesting since they seem to represent a Mexican viewpoint on the state of development and prospects for the future.

Jane M. Porter

*Agricultural Policy in an Affluent Society*

Edited by Vernon W. Ruttan, Arley D. Waldo, and James P. Houck. W. W. Norton and Company, New York. 321 pages. 1969. \$2.50 (paper).

The editors have drawn upon varied sources, including this journal, for readings centered around the topic indicated by the title.

*Readings in Agricultural Policy*

Edited by R. J. Hildreth. University of Nebraska Press, Lincoln. 463 pages. 1968. \$3.95 (paper).

The readings were selected from the proceedings of the National Agricultural Policy Conferences, which have been held annually since 1951 for extension specialists concerned with agricultural policy and public affairs.