

**Stochastic Models for Social Processes (3rd Edition)**

D.J. BARTHOLOMEW

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Anyone intending to build stochastic models of a social process should have a look at this book. They will not find exactly the model they want, but one of the many included is likely to give them something of what they need. There are models of social mobility, of manpower systems and of the spreading of rumours.

To someone unacquainted with the field, this would sound very promising. Unfortunately that would be misleading. Like most developments in the social sciences, the theory is far ahead of the practice, and the value of applying most of this work has yet to be shown. Much of the mathematics is devoted to proving that models constructed on certain assumptions do have the properties which one would intuitively expect.

Markov processes appear again and again. In most other fields equilibrium distributions would be sought immediately and transient solutions would rate barely a mention. In social processes it takes time to reach an equilibrium, and it is unlikely there would not be major structural changes over a long period. Finding transient solutions is hard; only particularly simple models can be fully solved. This suggests two approaches, both of which are used in the book. One is to get equilibrium solutions anyway and interpret them with caution. The other is to solve the corresponding deterministic model and use the results as a guide. Neither of these is satisfactory but they are certainly better than nothing. As Bartholomew's first main function of models runs, they give insight into and understanding of the phenomenon in question. Whether such models are useful over and above this for prediction and design of social systems (his next two functions) is moot.

There are several changes from the second edition which probably contribute to the easy style of the book. Judging by the bibliography, the changes will also have brought the book up to date, though some interesting work published in J.O.R.S. has not been included.<sup>1-3</sup> Presumably the remark at the beginning of Chapter 6 on the top-heavy staff structure of U.K. universities was not in the first edition. All the more pity that the author did not include models that would show how to deal with this. He does reference an American paper on early retirement plans for universities, though without any discussion. Perhaps it is asking too much to expect an academic to apply his own models to his own problems, but it would have been a good recommendation.

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References

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- <sup>2</sup>JOSEF SCHMEE, EDWARD HANNAN and MATTHEW P. MIRABILE (1979) An examination of patient referral and discharge policies using a multiple objective semi-Markov decision process. *J. Opl Res. Soc.* **30**, 121-129.
- <sup>3</sup>BERNARD W. TAYLOR III and ARTHUR J. KEOWN (1980) A network analysis for an inpatient/outpatient department. *J. Opl Res. Soc.* **31**, 169-179.