

PREFACE

Within the realm of quantitative geography, systems modelling is specifically concerned with understanding those relationships that influence the attributes of phenomena located in space and time. The intention is to replicate the main processes influencing a system's behaviour and, thereby, assist its management through a capability to estimate future change. Over the last few decades, one of the major institutional initiatives for promoting such research has been provided by specialised Study Groups and Commissions established by the International Geographical Union (IGU). These scholarly networks have aimed to co-ordinate international research agendas for geographical systems modelling and their activities have been recorded in both edited volumes (Fischer and Getis, 1997) and special issues of learned journals (Wilkinson and Boots, 2000; Leung and Okabe, 2001). Presently, this facilitative task is the charge of the Commission on Modelling Geographical Systems (CMGS) appointed at the IGU Hague Congress in 1996 and chaired by Barry Boots (1996–2000) and Richard Thomas (2000–present).

Set against this background, this book provides a perspective on the work of the CMGS from 1996 until the IGU Seoul Congress in August 2000 through a collection of papers first presented to our sessions at this event. Moreover, a number of Japanese delegates were attracted to this Asian venue and their contributions provide many new ideas concerning the implementation of systems analysis. The selection of the complete set of materials, however, was guided by our intention of bringing together some of the main innovative ideas currently shaping both the development and testing of geographical systems models. To reflect this state of flux, the book is organised in two parts. The first is focussed on the more long-standing mathematical and statistical approaches to the analysis of geographical systems, while the second concentrates on the more recent opportunities offered by advances in geocomputation and the development of relatively new information technologies like the Internet.

In addition to this methodological stance, we were also conscious of the need to demonstrate the applicability of systems modelling to the wider geographical community. Reflecting current concerns for relevance, each paper has an applied component relating to one or more contemporary issues. Accordingly, the topics addressed by the contributors span both human and physical geography and many tackle key environmental concerns. Themes underscoring this variety of application include the design of warning systems for anticipating physical hazards (earthquakes, floods and new agents of infectious disease) and a contrasting emphasis on the analysis of urban systems (the management

of sprawl and energy consumption, the timing of shopping behaviour, and the local impact of socio-economic policy initiatives). More subtly, the geography of information technology is itself becoming increasingly scrutinised by systems analysts. As with many other phenomena of interest, computing facilities are also distributed unevenly in space and time which is creating fresh issues related to accessibility that are explored in the second part of the book.

Like most edited volumes, this book provides an overview of recent research that is not necessarily directed at beginning students. Instead, the intended readership is researchers, postgraduates, final-year undergraduates and professionals in the areas of quantitative geography, spatial analysis and modelling, and geographical information sciences. Given this audience, the collection of papers will provide a useful supplementary text for courses on quantitative geography and geographical systems modelling in both human and physical geography, and GIS and geocomputation. This role is particularly relevant for the many master's degree courses in these subject areas that have proliferated around the world during the past decade.

Finally, we would like to acknowledge the efforts of the authors contributing to this volume both for keeping to our stringent editorial requirements and for their advice in the form of referee's reports. In this respect, we also thank John Beebe, Marie-Josée Fortin, Houston Saunderson and Eric Sheppard who acted as external reviewers on some of the papers. Invaluable assistance with the production of the electronic version of the manuscript was given by Tim Jenkins (Manchester) and Tomoko Kuroiwa (Tokyo). Further information relating to this book, including coloured versions of many of the figures, is available on www.ua.t.u-tokyo.ac.jp/okabelab/atsu/mgs.html.

January, 2002

Barry Boots
Atsuyuki Okabe
Richard Thomas

REFERENCES

- Fischer, M.M. and A. Getis (1997), *Recent Developments in Spatial Analysis: Spatial Statistics, Behavioural Modelling and Computational Intelligence*. Springer, Berlin.
- Leung, Y. and A. Okabe (2001), 'The International Conference on Modeling Geographical and Environmental Systems with Geographical Information Systems.' *Geographical and Environmental Modelling*, **5**, 109–110.
- Wilkinson, G.G. and B. Boots (2000), 'Guest Editorial: Advances in the Modelling and Interpretation of Remotely Sensed Data.' *Geographical and Environmental Modelling*, **4**, 3–5.

Modelling Geographical Systems
Statistical and Computational Applications
Boots, B.; Okabe, A.; Thomas, R. (Eds.)
2002, X, 360 p., Hardcover
ISBN: 978-1-4020-0821-4