1. Introduction
   Metaphors of nature
   A solution space?
   Scope and plan of this book

2. From GIS to geocomputation
   In the beginning ...
   Technological facilitation
   Representing spatial phenomena in GIS
   Putting the real world on a diskette
   Data characteristics
   Basic functionality of GIS
   A systems definition of GIS
   Limitations of GIS and the rise of geocomputation

3. The rise of geo-information science and engineering
   Technology first ...
   Science to follow ...
   And now ... Geo-information engineering

4. Approaches to modelling
   A model of an x
   Typology of models
   Building models
   Evaluating models
   Applying models
   A summary of model development

5. The role and nature of environmental models
   The context of environmental modelling
   Environmental impact assessment
   Sustainable development
   Hazard, vulnerability and risk
   The decision environment
   Conceptual models
   Empirical models
   Models incorporating artificial intelligence
   Process models

6. Case studies
   Modelling approaches in GIS and environmental modelling
   Spatial coexistence
   Source-pathway characterisation
   Cluster detection
   Conclusion

7. Issues of coupling the technologies
   Some preconditions
   Initial conceptualisations
   An over-simplification of the issues
   Maturing conceptualisations
   de facto practices

8. Data and information quality issues
   The issue is ... Uncertainty
   Early warnings
   So, how come ...?
   Measuring spatial data quality
   Modelling error and uncertainty in GIS
   Managing fitness-for-use

9. Modelling issues
   Issues of scale
   Issues of algorithm
   Issues of model structure
   Issues of calibration
   Bring data issues and modelling issues together

10. Decision-making under uncertainty
    Exploring the decision space: spatial decision support systems
    Communication of spatial concepts
    Participatory planning and Web-based GIS
    All’s well that ends well?