

Chapter 9



Modelling

Models refer to the conceptual or mathematical simplification of reality; they are constructed in order to understand some aspect or process. For some aspects of physical geography such as climatology and understanding the relationships involved in chaotic and complex systems (Chapter 8), modelling is an essential tool to understanding; it could be argued that modelling is the *only* means available to facilitate our understanding of reality in these areas. Models are not reality itself and should not be viewed as such. Researchers who use models do not necessarily believe that their models correspond directly to reality. Nevertheless, on occasion some researchers may place too much confidence in models, and, likewise, some decision-makers may behave as if the models are reality. If this were not so then the shock associated with the failure of a model would not be such a surprise. Harvey (2010), in relation to the ongoing economic crisis, suggests that economic theorists (citing Samuelson in the *Washington Post* as his source) 'became too interested in sophisticated forms of mathematical model-building to bother with the messiness of history and that this messiness had caught them out' (p. 235). Add 'space' and 'place' to history and you have the nub of the problem. Models are simplifications, potentially complicated simplifications, but still simplifications of the messiness of reality. Belief in models as reality is a very correspondence-based view of reality (Chapter 2) and by implication the practice of science.

Leaving this reservation aside, the central role and importance of modelling in contemporary physical geography is paramount. Without modelling, whole areas of the subject would not exist or would at least have difficulty in developing understanding of their subject area. Demeritt and Wainwright (2005) suggest that models provide a means of understanding and predicting the operation of systems that cannot be analysed through experimental methods such as variable control and manipulation. In addition, analysis may not be feasible for practical and political reasons or because of the spatial and temporal scales of the systems involved, and so modelling techniques have to be used instead. General circulation models in climatology are a clear example of this. Acceptance that modelling represents reality (even if researchers know and understand the limitations of such a view) has also been important for the development of the subject. The development of an accepted standard model of climatic change in the UK over the next 30 years (UKPC09) has been the basis of research projects and the development and refinement of our understanding of the likely impacts of future climate change. It is also probably correct to say that without modelling, or the acceptance of modelled behaviour as real as