Introduction

THE EDITORS

At any one moment in time, the general environment within which management operates is set by forces and factors far outside the control of any one individual. Thus laws may be set not only by national governments but through the compromise agreements they have struck. European Directives which apply to all members of the European Union form one such supranational agreement. Subscription to the World Trade Organisation Treaty is another, albeit more voluntary, example. Economic, legal, social, educational, employment, environmental, and other policies all impact on the geography of any one country and on the reasons for use of GIS. In some cases, societal values set the operating framework rather than explicit laws or policies. Even though the manager may be able to do little about these, he or she should be aware of their implications since they can be a source of both problems and opportunities for a rapidly globalising business like GIS. As one example, David Rhind points out in his chapter in this Section that the legal protection of databases accorded by the European Database Directive may ensure that US firms would find it advantageous to build some of these in Europe rather than in the USA.

It is a great fallacy to believe that GIS can be reduced to a 'now press button B' process. The complexities of these systems – amply demonstrated elsewhere in this book – render this mass production, deskilled labour viewpoint far from reality. It may well be that the introduction of GIS in operational management can lead to the loss of great swathes of employment (as in the British utility industry where the labour force was halved through privatisation and the introduction of new technology – including GIS). But those who are left have to operate and manage much more complex systems, perform a wider span of activities, and carry greater responsibilities. Moreover, the advent of new industries is primarily based on the trading or use of information to seize competitive advantage: it follows that 'knowledge workers' will be increasingly in demand.

For all these reasons, the importance of education and training has never been greater, both generally and in GIS. To that end, Pip Forer and David Unwin (Chapter 54) examine two cross-cutting aspects of education and training – education 'about what' and 'for whom'. They argue that most education and training thus far has been about systems, ranging from 'which button to press first' approaches to more wide-ranging pedagogy about the nature of GI Systems and how, for what, and when they should be used. In general, they find this to have been quite successful. But they argue that it needs to be superseded by education and training about GI Science (the scientific principles underlying processes operating across space and time) plus GI Studies (the social, legal, and ethical issues associated with use of GIS). Cutting across this 'what should be studied theme', they also examine how and what should be taught at tertiary (higher education) level, in schools, and for continuing professional development: they conclude that the greatest areas for expansion are the last two. Underpinning much of what they say is the view that the advent of the Web and easy-to-use ubiquitous tools changes everything in education and elsewhere in GIS.

The concept of privacy is an elusive one to define in any widely agreed way. Nevertheless it is a matter of great concern and debate in many countries at present, its manifestations ranging from the

unwelcome attention of paparazzi to 'profiling' of individuals by examination of their bank accounts and other personal records. Michael Curry (Chapter 55) shows how the concept of privacy has changed over time under the influence of technological developments and how the increasing use of the law to define the nature of privacy has eroded traditional safeguards. It has been argued by some – including Curry – that GIS is playing a role in undermining privacy. Yet it can also be argued that its area aggregation capabilities, allied to statistical threshold safeguards commonplace in population census data, actually render GIS a privacy protection device. Curry's central point, however, is more subtle: he argues that the creation of inferred characteristics of 'virtual people' from aggregate or detailed data becomes an invasion of privacy when these virtual people or fictitious personae are named after real individuals. These digital fictitious personae become reality so far as many commercial or even government processes are concerned. He argues that the trend to geocoding everything via address look-up tables, and such like, will lead to a world without privacy. Is this really so? Even if true, is it unavoidable and does it matter? Or is it simply a minority academic concern expressed by those isolated from business except through having their salaries ultimately paid by the fruits of commercial labours of others?

The final chapter by David Rhind (Chapter 56) discusses national and international geospatial data policies. The existence of such data, their currency, accuracy and consistency, their availability and price, and the terms and conditions of their use are now all major factors in determining the utility, cost, and effectiveness of GIS. The chapter examines the economic, legal, and other policies of the relevant parties, notably data suppliers – and especially those in government since it is government that has been the source of most geospatial data until now. The relevant policies extend far beyond data pricing to include procurement, intellectual property rights, encouragement of markets, monopoly trading, and privacy. Rhind shows that there are considerable variations in these policies between countries; indeed in some countries there is either no information policy at all or multiple, sectorally-based ones. One manifestation – but certainly not the only one – of these international policy variations is the stark difference between US 'cost of copying' provision of data by the Federal Government in contrast to the 'market pricing' policies operated in Canada, New Zealand, the Nordic countries, and the UK. From a technical standpoint, the growth of a commercial data supply sector producing high-resolution satellite imagery and road centreline and other data will impact both on national policies and on government data suppliers in future.

Recent national and international policy initiatives have been set up by governments worldwide to foster wider and safer use of geographical information. An early version of these was the US National Spatial Data Infrastructure. The key features of this, and the similarities and differences between it and two equivalents, are also outlined by Rhind. The variation in national policies, both in principle and in their detailed implementation, has consequences for the nature of GIS developments in different countries and has particular implications for those organisations operating across national frontiers. However – Rhind argues – the situation is unlikely to change dramatically in the near future. Is homogeneity of policy impossible and even perhaps undesirable?