Contents

List of illustrations vi
Preface ix
Acknowledgements xi
Beyond the book xii

1 Introducing cyberspace 1
2 Geographies of the information society 32
3 Geographies of cyberspace 52
4 Introducing the cartographies of cyberspace 65
5 Mapping information and communication technologies 81
6 Spatialising cyberspace 107
7 Mapping asynchronous media 129
8 Mapping synchronous social spaces 142
9 Spatial cognition of cyberspace 166
10 Imaginative mappings of cyberspace 181
11 Future mappings of cyberspace 207

Notes 220
Bibliography 230
Index 256
Illustrations

Figures

1.1 Merging timelines of cyberspace 8
1.2 The development of ARPANET (1969–1975) 9
1.3 Virtual geography 22
4.1 The evolution of maps 66
4.2 Map projections pre-1569 67
4.3 UK clickable website directory 79
5.1 Israeli Internet infrastructure 83
5.2 MIDS icon host map, 1997 86
5.3 Three-dimensional surface of IP address space density in the UK for government agencies 87
5.4 Imperative! domain name maps: (a) dot map of the USA, (b) 2.5-dimensional map of New York City 88
5.5 Domain name maps for San Francisco: (a) SF and Bay region, (b) SF downtown, (c) SF multimedia district 89
5.6 Frame from a SaVi animation of the Teledesic satellite constellation 90
5.7 Mapnet interactive map of Internet infrastructure 92
5.8 Three-dimensional VRML map of the CESNET backbone 93
5.9 Three-dimensional maps: (a) Global View, (b) Europe, (c) USA 94
5.10 NeoTrace traceroute 95
5.11 VisualRoute traceroute 96
5.12 Usenet traffic flows 97
5.13 European traffic flows, 1997 98
5.14 Palantir Web traffic visualisation 100
5.15 MIDS Internet Weather Report animation frames 102
5.16 Daily rates of messages and participants in Usenet, 1 November 1996 to 12 January 1997 104
5.17 Hourly rates of messages and participants in Usenet, 12 November 1996 to 18 November 1996 104
5.18 Three-dimensional CAD model of human extensibility 106
6.1 Topological map of ARPANET in 1969 108
6.2 Topological map of ARPANET in 1977 109
6.3 University of Buffalo campus backbone 110
6.4 Topological map of Internet Initiative Japan backbone, October 1999 110
6.5 Topological map of the MBone, 1996 111
6.6  Conceptual map of cyberspace, 1994  113
6.7  ET-Map, a hierarchical category map  115
6.8  Hand-crafted static maps of websites: (a) Hilton Hotels, (b) Yell Guides  119
6.9  Astra SiteManager  120
6.10 Footprints map of website activity  121
6.11 MAPA website landscape by Dynamic Diagrams  122
7.1  Typical Usenet interface  137
7.2  Crosspost map of a Usenet newsgroup using Netscan  140
8.1  IRC chat interface  143
8.2  Schematic of the generic spaces found in a MUD  150
8.3  Hand-drawn maps of the centre of two MUDs: (a) TinyLondon,  151
     (b) LambdaMOO
8.4  Map of part of Discworld MUD  152
8.5  Automatic mapping of MUD room topology using zMUD  153

Black and white plates

4.1  Wired Whitehall  77
4.2  Virtual UCL  78
5.1  Network Society Map  84
6.1  NewsMaps, June 1999  116
6.2  Examples of information maps: (a) Visual SiteMap, (b) Cyberspace  118
     Geography Visualisation, (c) WEBSOM, (d) Map of the Market,  
     (e) Digital Library Access
6.3  Three-dimensional New York Stock Exchange trading floor  125
8.1  Model of the room topology of BayMOO  152
8.2  Three different virtual world interfaces  154
8.3  Views of AlphaWorld  156
8.4  Urban density of AlphaWorld, August 1999  158
8.5  Maps of AlphaWorld at eight scales, generated by the Vevo  159
     mapping system
8.6  30 Days in ActiveWorlds  164

Colour plates

(All colour plates appear in one section between pp. 116 and 117.)
1A UUNET UK backbone, 1998
1B Network connectivity
1C GeoBoy three-dimensional traceroute
1D NSFNET traffic flows
1E Web Hopper dynamic traffic map
2A/2B/2C Interactive visualisations of traffic flows
2D/2E Web traffic 'skyscrapers'
3A Cicardian geography of cyberspace
3B Plankton interactive visualisation
3C ISP interconnectivity
4 Internet connectivity graph
5A Site Lens map of a website
Illustrations

5B Information landscape: Harmony hypermedia browser
5C VR-Vibe datascape
5D Webspace landscape
5E Hyperbolic visualisation of a website
6A HyperSpace Visualiser
6B Semantic Constellation
6C WebPath browsing history
6D SiteManager hyperbolic visualisation of a website
6E HotSauce information fly-through
6F Visual Who
7A Parasite experimental visual email application
7B/7C/7D Loom maps of a Usenet newsgroup
7E/7F Chat Circles
8 Satellite maps of the urban development of AlphaWorld

Tables

1.1 Distribution of Internet users 4
2.1 Internet links to progressive causes 38
7.1 Typology of social media of cyberspace 130
7.2 Emoticons and the feelings they are used to express 131
7.3 Hierarchical structure of newsgroups 135
7.4 Top ten newsgroups by number of articles and number of posters 139
9.1 Navigation tool kit 180