

Atlas of Cyberspace

It is now over 30 years since the first Internet connection was made, between nodes installed at UCLA and Stanford University in the United States. Since then, a vast network of information and communications infrastructure has encircled the globe supporting a variety of cyberspace media – email, chat, the Web, and virtual worlds. Such has been the rapid growth of these new communications methods that by the end of 2000 there were over 400 million users connected to the Internet.

Accompanying this growth in the infrastructure, the numbers of users and the available media has been the formation of a new focus for cartography: mapping cyberspace. Maps have been created for all kinds of purposes, but the principal reasons are: to document where infrastructure is located; to market services; to manage Internet resources more effectively; to aid searching, browsing and navigating on the Web; and to explore potential new interfaces to different cyberspace media. In creating these maps, cartographers have used innovative techniques that open up new ways to understand the world around us.

This is the first book to draw together the wide range of maps produced over the last 30 years or so to provide a comprehensive atlas of cyberspace and the infrastructure that supports it. Over the next 300 or so pages, more than 100 different mapping projects are detailed, accompanied by full-colour example maps and an explanation as to how they were created.

Martin Dodge and Rob Kitchin
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About the book

The **Atlas of Cyberspace** illustrates graphically, the shapes, structures and complex forms of the Internet, the World-Wide Web and other virtual media. Drawing on five years worth of research, and divided into four key sections - infrastructure and traffic, information navigation, community and communication, artistic visions - the best and most interesting maps of cyberspace have been compiled into this unique atlas for the Internet age.

Why create an Atlas of Cyberspace?

For several thousand years humans have created maps of the world around them as a means of understanding, and controlling, that world. The maps in the **Atlas of Cyberspace** are important as they are powerful in framing our conception of the new virtual worlds beyond our computer screens. More and more of our time and leisure and business activities are spent in virtual space and yet it is a space that is difficult to comprehend and mentally visualise. Moreover, it is a space in which it is easy to get lost and confused. Many of the cyberspace mapping projects try to give it spatial structure in order to make sense of it and the transactions that take place there. Because, with the exception of the supporting infrastructure - fibre-optic cables, servers, satellites and so on - cyberspace is composed of computer code with no material existence, the research underlying these new maps is also important as it is pushing back the boundaries of cartography and how we interact with maps, creating interactive and dynamic representations which are light-years from the heavy leather bound paper atlases you'll find in the local library. Some of the maps now have historical significance as they chart the development of old computer networks from decades ago that no longer exist. Other maps in this collection are simply beautiful to look at, possessing powerful aesthetic qualities in their own right.

Mapping cables and computers

At a basic level, it is relatively easy to map the locations of telecommunications infrastructure such as cables and computer servers onto real-world geography. This type of cartographic approach can well illustrate how computers are physically wired together to create complex networks that link cities and countries across the globe. It also reveals the uneven geographic distribution of infrastructure and those areas of the world that have poor access to cyberspace or are presently completely excluded.

Geographic maps of infrastructure are also commonly employed by network owners for two reasons. First, they are useful to network engineers to monitor traffic flows and network performance. Second, they are used as promotional tools to demonstrate to potential customers how extensive and capable their networks are. The cartographic techniques employed can vary substantially, including interactive 3D globe representations and dynamic maps that update in real-time.

Mapping information

The Internet, and the Web in particular, is a large and rapidly growing information resource. Quite literally billions of pieces of information are stored on computers around the globe and they can be potentially accessed in seconds. However, searching and navigating this information can be difficult, especially when it is composed of long lists of references. Finding useful and relevant information, in a timely fashion can be very frustrating as most Web users will be only too aware. One experimental solution has been to spatialise large information collections - that is to summarize and characterize the information using a map-like representation where location, distance and proximity in the display represent key aspect of the data (e.g. the more related the information, the closer together it is drawn on the map). The result is an information map that summarizes the content thousands of pieces of information on a single screen and which can be navigated like a conventional map. Information mapping exploits the fact that people generally find it easier to process and understand visual displays than large volumes written text or columns of numbers. This processes is known as spatialisations and different algorithms can produce variety of map forms, ranging from simple 2D maps to immersive 3D fly-through data-landscapes, and in scale from individual websites up to large sections of the Web.

Mapping who's talking

One of the most popular features of cyberspace is its ability to support communication and foster a sense of community between people who are geographically dislocated. Millions of people meet virtually everyday to talk, argue, flirt, joke and so on, using a variety of online media channels - email, mailing lists, bulletin boards, instant messaging, chat rooms, MUDs, virtual worlds, shared game spaces. Trying to comprehend this babble of voices and the diverse social relations being created is difficult, even sometimes for those doing the talking. One recent method employed has been the use of spatialisation, mapping the conversation itself, the relationships between talkers, and the social environment people virtually occupy (e.g. the virtual town).

Imagining what cyberspace might look like

The **Atlas of Cyberspace** also looks beyond the bounds of conventional atlases to consider the ways in which cyberspace is being envisioned and imagined by writers, film makers, artists and architects. These visualisations and mappings are important creative works in their own right, providing an often critical way in which to think about cyberspace and its structure, content and operation. These visions have added relevance, however, because they often a source of inspiration and 'blueprints' for designers, programmers and creators of the code that is cyberspace. This has particularly been the case with fiction in the past - for example William Gibson's 1984 novel *Neuromancer* is widely cited as a formative influence

by many computer scientists. In the **Atlas of Cyberspace**, we review the best artistic and architectural projects that seeking to examine cyberspace's spatial form and structure.

Mapping the future

The **Atlas of Cyberspace** provides a fascinating insight into how researchers, designers and artists are trying to understand the Internet's infrastructure, the traffic that flows through it, and envisage the multiple virtual worlds and communication it supports. It will be of interest to anyone who has ever wondered what cyberspace looks like.

If you have any comments, questions or suggestions, we can be contacted at:
authors@AtlasofCyberspace.com

Martin Dodge

Martin Dodge is a computer technician, researcher and part-time Ph.D. student at the Centre for Advanced Spatial Analysis (CASA), University College London. His background is in social geography and geographical information systems. His Ph.D. research is on the geographical analysis of the Internet and mapping cyberspace. He directs the Cyber Geography Research project.

<http://personalpages.manchester.ac.uk/staff/m.dodge/cybergeography/>

Rob Kitchin

Dr Rob Kitchin is a Senior Lecturer in Human Geography at the National University of Ireland, Maynooth. His research interests centre on the geographies of cyberspace, geographies of disability, and cognitive understandings of space. He is the editor of the journal *Social and Cultural Geography*, and (co)author or co-editor of several other books, details of which can be found on his work homepage.

<http://www.nuim.ie/nirsa/people/admin/kitchin.shtml>

National University of Ireland Maynooth

<http://www.nuim.ie/>

UCL Centre For Advanced Spatial Analysis

<http://www.casa.ucl.ac.uk/>

The full content of the book can now be downloaded for free.

<http://www.kitchin.org/atlas/contents.html>

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Explores the new cartographic and visualization techniques being employed in the mapping of cyberspace, concentrating on the areas of; Internet infrastructure and traffic flows, the World Wide Web, Online conversation and community, and Imaging cyberspace in art, literature and film.