

Cybergeography

Cybergeography is the study of the nature of the Net through the spatial perspectives of geography and cartography; it is an emerging field of analysis that seeks to reveal the various ways that place and space matter to Internet development and usage.

Cybergeography then is broadly conceived, focusing on the geographies of the Internet itself (the spatialities of online activity and information), its supporting infrastructures (wires, cables, satellites, etc), and the spatial implications of Internet technologies with respect to cultural, social, economic, political and environmental issues. Much cybergeography research has focused on mapping and producing spatialisations (giving spatial form to information that has no spatial referents) of the Internet drawing on and contributing to principles underpinning much of Geographic Information Science.

Since the development of wide-area computer networking technologies in the late 1960s, the Internet has grown into a vast socio-technical assemblage of many thousands of interconnected networks supporting numerous different types of communications media – email, webpages, instant messaging, ftp, telnet, virtual worlds, game spaces, and so on. Hundreds of millions of people go online everyday to communicate, to be entertained, and to do business, and billions of transactions occur across the Internet and intranets everyday. Despite rhetoric that the Internet is placeless and that advances in telecommunications are fostering the ‘death of distance’, it is clear that place and space still matter because the Internet still requires concentrations of expensive hardware and infrastructure to work and companies still require skilled workers and other forms of infrastructure and business networks which are located in geographic space to function effectively.

Types of Mapping

Interestingly much cybergeography mapping research is conducted not by geographers and cartographers, but rather by computer and information scientists. This has led to a diverse array of geographic visualizations aimed at revealing the core structures of

Internet technologies and their usage. Geographic visualizations of the Internet can be divided into three broad types: mapping infrastructure and traffic; mapping the web; and mapping conversation and community.

Mapping infrastructure and traffic takes many traditional forms of cartographic representation and applies them to the Internet. By far the most common form of Internet mapping, these maps most commonly display the location of Internet infrastructure, the demographics of users, and the type, flow and paths of data between locales and within media. Such maps have commercial and political value revealing where billions of dollars of commercial investment has been located, allowing network maintenance, and highlighting the nature of digital divides from the global scale down to the local inequalities between neighbourhoods.

Mapping the web is a much more difficult proposition to mapping infrastructure. It most often uses the technique of spatialisation to give a spatial form or geometry to data which often lack spatial referents. In effect it applies the principles and techniques of geovisualization to non-geographic data. It attempts this because data held on the Internet or is about the Internet (such as search engines) are often extremely large and dynamic, and difficult to comprehend when displayed as lists. Spatialisation works on the principle that people find it easier to comprehend complex structures and patterns in visual images rather than in text.

Mapping conversation and community attempts to spatialise modes of online communication and interaction between people; to undertake what might be termed people-centred geovisualization for social cyberspaces. The Internet supports a variety of social media – email, mailing lists, listservs, bulletin boards, chat rooms, MUDs, virtual worlds, and game spaces, and like maps of real world spatial domains, there have been a number of attempts to capture spatially the nature and forms of interaction online. These spatialisations have been developed as analytic tools to help better understand the social impact of the Internet, and to also help users comprehend the communal spaces they are inhabiting virtually.

Pushing Boundaries

The maps and spatialisations that are being created by cybergeographers are making significant contributions to geographic information science in at least two ways. First, the fundamental research being conducted to produce different mappings are at the cutting edge of visualisation aesthetics and understanding data interaction.

Second, the research is contributing to experiments concerning how to visualise extremely large, complex and dynamic data. Whilst some aspects of the Internet are relatively easy to map using traditional cartographic methods (such as cable routes and traffic flows), others are proving to be extremely difficult. This is because the spatial geometries of cyberspace (information and communication media) often bear little resemblance to the space-time laws of geographic space, being purely relational in character the products of software algorithms and spontaneous human interactions. As such, they only exhibit the formal qualities of geographic (Euclidean) space if explicitly programmed to do so.

Trying to apply traditional mapping techniques to Internet spaces is then all but impossible as they often break two of the fundamental conventions that underlie Western cartography, firstly, that space is continuous and ordered, and secondly, the map is not the territory but rather a representation of it. In many cases, such as maps of websites, the site becomes the map; territory and representation become one and the same.

Cybergeography is an important and growing metafield of study, one in which geo-visualization plays an significant role, and which in turn contributes appreciably to fundamental visualization and data interoperability within geographic information science.

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See also Spatialization.

Further Readings

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