Do Internet Librarians Need Maps of Cyberspace?



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/ Internet Librarian International 2003, Birmingham, 27th March 2003 /

The talk in a nutshell

- do internet librarians need maps of cyberspace?
- yes!
- but, only where appropriate
- supplement, not substitute
- however, there is no complete map you can go and buy today
- but, I'll give a tour of some of best examples

How do we navigate cyberspace?



how we <u>really</u> navigate the online worlds..

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Mapping cyberspace?

- there are many ways to describe and understand cyberspace
- economics, legal, mathematics, art, sociology, etc..
- I'm a geographer, so I believe *maps* enjoy a privileged position
- maps have been powerful visual tools for understanding the world for 1000s of years
- maps have been key in framing our understanding places, their size, shape and the relations between them
- navigation 'what is where' and 'how to get there'
- revealing what is hidden. making the invisible visible
- maps vital in war, commerce and government

Defining 'cyberspace mapping'?

cyberspace

- the conceptual spaces of information and communications flows within the digital infrastructure of computing hardware, software code and high-speed telecommunications networks
- it is not the technology or infrastructure itself, but the virtual spaces that this enables
- map and mapping
 - maps are graphic representations that facilitate a spatial understanding of things, concepts, conditions, processes, or events in the human world
 (Harley and Woodward, History of Cartography, Volume 1, 1987)
- maps <u>of</u> cyberspace, not maps <u>in</u> cyberspace

Librarians and cartographers

- organising large volumes of information
- helping people find what they need
- so, maybe, Internet librarians could use maps of cyberspace?

The map is a help provided to the imagination through the eyes. Henri Abraham Chatelain, Atlas Historique (1705)

Navigating information - not quite Hollywood

- improving ways to navigate online content
- is there a middle ground between current textual / list type interfaces versus the immersive 3d (cool) interfaces of Hollywood?
- from feedback received, it seems like many people are seeking better navigation tools and interfaces
- experience from cartography can help
- examine the nature of information mapping

Navigational activities

• much information seeking is haphazard, illdefined. may not know exactly what you are looking for. Iterative and fluid. exploration

Scanning - covering a large area quickly and without depth

- <u>Browsing</u> following an undirected path by associations until you find something of interest
- <u>Searching</u> looking for an explicit target
- <u>Exploring</u> finding out the full extent and diversity of what is available
- <u>Wandering</u> random and unstructured movement without purpose

Information maps - the 'classics'



John Snow's 'Cholera' Map, 1854

Information maps

- information maps for content navigation
- wide variety of 'experiments', some products
 - visual metaphors
 - dimension (2D, 2.5D, 3D)
 - static dynamic
 - levels of user interactivity
- scales of the maps
 - individual site maps
 - dynamic surf maps / trail maps / history visualization
 - large chunks of information space
- focus on interactive 2d space-filling information maps

The power of information maps

- the missing 'up button' on the browser
- intelligent summarisation and generalisation
- 3 key advantages:
 - a sense of the whole (the birds eye view / big picture)
 What is there around here?
 - revealing hidden connections / structure
 - support interactive browsing

Where is the wisdom we have lost in knowledge? Where is the knowledge that we have lost in information. T.S. Elliot, The Rock (1934)

Making information maps

- spatialisation turning text into maps
- various algorithms
- key spatial properties:
 - area
 - position
 - proximity
 - scale

+ the graphic properties of colour, shape, labeling, etc



Ben Shneiderman's Treemaps

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http://www.cs.umd.edu/hcil/treemaps/

University of Arizona AI Lab's ET-Map



The top-level map shows forty odd broad entertainment 'subject regions' represented by regularly shaped tiles. Each tile is a visual summary of a group of Web pages with similar content.

When a user selects the 'MUSIC' subject region, a second-level map with numerous different music categories is then presented to the user.

Delving deeper, the user wants to learn more about jazz music, so clicking on the 'UAZZ' tile leads to a third-level map, a fine-grained map of jazz related Web pages.

Finally, selecting the MILES DAVIS' subject region leads to more a conventional looking ranking of pages from which the user selects one to download.

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Swedish (7) Turkish (2)	1	

Antarctica Systems' Visual Net : Map.net demo





Zooming into the Middle East



Zooming in deeper ... Iraq





WebMap Technologies - InternetMap



http://www.webmap.com/



SmartMoney.com - Map of the Market



http://www.smartmoney.com/marketmap/



http://historywired.si.edu

Social maps - what are people talking about?

Netscan project by Marc Smith, Microsoft Research



http://netscan.research.microsoft.com/



Music

Newsgroup Nam	Newsgroup Name Date		Total Groups		Total Messages		T	otal Posters	Deep red means - 300% change
alt.music	01/01/2	001	807		19773	6		43757	Deep green means + 300% change
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TV



And of course Sex (the alt.sex newsgroups)



Network maps of information spaces



Kartoo search engine

http://www.kartoo



TouchGraph GoogleBrowser

The power of maps

- who makes the maps? and what do they want to show and choose not show?
- all maps are authored
- all maps are subjective
- easy to assume that the map is an objective representation of reality
- maps and interfaces to cyberspace are very powerful

So much has already been written about everything that you can't find out anything about it. James Thurber (1961)

Distortion and deception "how to lie with maps"

- most obvious being through
- data selection/omission
- projections
- how are maps of information content deceiving?
- many ways to project content
 onto a flat map

Mark Monmonier, *How to lie with maps* (Chicago University Press, 1996)









A head drawn on the Mollweide projection (top) has been transferred to Mercator's projection (center) and to the cylindrical equal-area projection with standard parallels at 30° (bottom). Just because the profile looks most natural on Mollweide's projection, that projection is not necessarily "better." The natural profile could have been drawn on any projection and then plotted on the others.

Maps as frames of space



Maps as frames of space





Maps as frames of space

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Potential developments

- surf maps integrated into the browser
- maps of search engine results (Google map)
- using geographic location as a classification key. automatic geocoding of content (location aware devices). mid air messaging
- beyond text search multimedia
- leverage information from earlier searchers (annotations, digital dog ears, virtual footprints)

Mapping Knowledge Domains

nortality/ages

http://vw.indiana.edu/sackler03/

Conclusions

• can we make information maps?

- yes

- can we make <u>really useful</u> information maps?
 probably (hopefully), but maybe not yet
- how helpful are the current maps in navigating online content?
- are the maps just eye candy?
- the 'killer map' is yet to be drawn
- I want the London Tube map for the Web

Conclusions

- major usability issues, need evaluation
- many people have trouble reading maps
- need very clear metaphors
- easy modes of interaction and support
- concern for privacy issues. maps are often used to monitor, track and control
- many maps funded by military and marketing
- map usage reveals much about you
- no such thing as a *true* map of cyberspace

Further reading



Katy Börner, Chaomei Chen, & Kevin Boyack (2003) Visualizing Knowledge Domains. *Annual Review of Information Science & Technology*, Vol. 37.

- questions ?? I would welcome feedback, email me at m.dodge@ucl.ac.uk
- the slides of this presentation are available at www.casa.ucl.ac.uk/martin/internetlibrarian.pdf
- want to know more on cyberspace mapping, see www.cybergeography.org/atlas

