The visualization of database search results

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Introduction: Edward Tufte describes the visual presentation of quantitative data as "envisioning information." A number of databases, from Google to specialized subject databases, offer a graphical representation of research results. Visualization is offered as an alternative method for evaluating search results. This trend deserves closer scrutiny, since the question of how database users evaluate their search results is central to the success of their library research.

Concept Mapping: The Web of Knowledge citation databases have attempted to create maps that show the relationships between publications. Credo Reference uses a technique called hyperbolic browsing to show relationships between ideas. The Google "Wonder Wheel" also uses this approach to visualizing concepts. These tools tend to be peripheral menu options that are usually overlooked by searchers.

Diagramming Relevance: Ebsco databases offer a visualization tool to show how search refinements narrow results. Especially fun in Georef, where the search results remind one of a stratigraphic column! However, this is not much different from a breadcrumb trail in the menu bar of a web browser:

Web 2.0: Tag clouds or weighted lists, introduced by Flickr and del.icio.us, are databases built on individually assigned metadata "tags." Flickr users can search tags, and even georeference tags on maps. Thumbnail photographs display the results of an image database search. Yahoo's "delicious" search results are displayed as text hit lists. Both fail to take full advantage of the possibilities of tag cloud as search result. IBM's Many Eyes is an interesting experiment in user-generated information visualization.

Searching with Pictures: Chemical engineers recognize the value of searching a graphical database such as SciFinder, and the power of being able to draw part of a chemical structure to search for related information.

An idea that has come and gone?

I would argue that, at first glance, the interpretation of visual or graphical search results is less intuitive than database search results presented as a list of text references or URL links. The average Google user can interpret and evaluate a list of search results to their own satisfaction without formal training. The results are relevant and good enough for their purposes. Each visualization scheme requires a certain amount of training or practice to allow interpretation of the results. They require more interaction with search results, and more effort in selecting a path to follow to the best results. These are the behaviors we seek to instill in our library researchers, and would seem to offer a distinct advantage over the text list. However the necessity to work harder to obtain useful results, and the trial and error nature of following many possible paths, seem to be significant barriers to the successful visualization of database search results. The most successful are those databases which index graphical information, from photographs to molecular drawings. There are questions about the commercial viability of visualization tools as well; I began exploring the topic of graphical search results in 2007. Since then, Groxis and their patented visualization tool Grokker have ceased business, and Yahoo, the new owner of delicious, has de-emphasized tag clouds.

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