

Brief Bio and (PR)²: Problems & Pitches – Raves & Rants by {insert author name}

In preparation for the Science (Weather) Forecasts Workshop on October 26th, 2006 at the New York Hall of Science, NYC, we ask you to provide a brief bio and your input to the questions below. Feel free to concentrate on the questions for ‘Map Makers’, for ‘Funding Agencies / Clients’, or answer both sets.

We plan to make your input available at http://scimaps.org/meeting_061026.php before the meeting to ease introduction of participants and to structure the workshop more effectively.

Thank you for your time.

Biography (about 250 words)

Originally from Oregon coast, BA from Bennington College, Internships at SFI doing networks and modeling for John Padgett, short gig at U of Chicago Social Science Computing on network components of the REPASt agent-based sim framework. Work for Dan McFarland at Stanford on dynamic network viz SoNIA project. Work for Advanced Technology Assessment (ATA spa) building software library for visualizing and exploring network information latent in biopharma DBs, especially medical publications and patent data. Consulting work with CSDE on viz for dynamic networks and disease diffusion. Currently working as a consultant in San Francisco, interested in building opensource tools for data integration and visualization, also in using network viz and analysis for tracking political funding and government transparency.

Publications:

Skye Bender-deMoll and Daniel A. McFarland (2006) The Art and Science of Dynamic Network Visualization Journal of Social Structure. Volume 7, Number 2.

<<http://www.cmu.edu/joss/content/articles/volume7/deMollMcFarland>>

Moody, McFarland, Bender-deMoll (2005) "Dynamic Network Visualization" American Journal of Sociology, volume 110, pages 1206-1241

<<http://www.journals.uchicago.edu/cgi-bin/resolve?id=doi:10.1086/421509&erFrom=277221353563485417Guest>>

Home page:

<http://skyeome.net/wordpress/>

General Questions

What is your main interest in attending the workshop?

I'm curious to see what kind of work others are doing in mapping data, what they see as key problems and directions for possible solutions. I'm interested in the possibility of coordinating with others to solve common technical issues and create frameworks for future collaboration.

What is your main interest in 'mapping science' or 'forecasting science'?

I'd like to have access to (and help to build) tools which can help with the process of abstraction and overview necessary to evaluate and assess relationships and relevancy in the huge data streams now available to us. I'm interested in generalizable (usable in multiple domains beyond just science mapping) techniques for creating mappings high-dimensional datasources into forms that are accessible to wider audiences.

What is the best static visualization of dynamic phenomena, e.g., growth or diffusion processes, you have ever seen? Examples could come from science, art, or any other field of human endeavor.

Best puts the bar pretty high, I've never seen or created one I was really happy with. Here are some I find interesting:

<http://vlado.fmf.uni-lj.si/pub/networks/doc/dagstuhl/large.pdf> , pg 15. The Pajek team's map of an unfolding citation network on Self-Organizing Maps.

I like the theme river from PNL:

<http://infoviz.pnl.gov/images/themeriver675.gif>

The two bottom images in

http://www.stanford.edu/~skye/bend/theG8/cls145_970408.pdf The image on the bottom right is a distance matrix of Dan McFarland's conversation networks extracted as 2.5 minute sliding windows for one class period. Each row (or column) of the matrix shows the comparison of a single slice network to all of the others. White indicates large differences between networks, red means low. Time moves from the lower left to the upper right, so the red diagonal shows that each slice is similar to itself. The image on the bottom left shows a PCA projection of the path the same network traced out in the very high dimensional phase space (connect the dots ;-) as it changed. The axes don't have literal meaning, but when the trace returns to various regions, it indicates that the graph structures are similar at those time points. In both plots you can see that there are two highly distinct time regions of network activity.

Questions for Map Makers

Please provide higher resolution images, a brief description, and if available citation references for up to three science maps you have created and are most proud of. Use one page per map.

Most of the science maps I've worked on were during my time at ATA and have been presented at previous sessions. For examples of patent and MESH term networks, see their literature at:

http://www.atalab.com/company/ata_brochure.php

I can't paste it in, but here is a link to a quicktime movie of a diffusion/contagion process I created for the Network Modeling team at the Center for Studies in Demography and Ecology at University of Washington (Martina Morris, Mark Handcock, et. al):

http://csde.washington.edu/~skyebend/gsim2infect0_2Sustain.mov

The movie illustrates simultaneously network dynamics (sex contacts) and diffusion (red borders) in a model in which the groups (node colors) have varying in/out group contact rates.

What opportunities / solutions do maps / forecasts of science offer for what stakeholders?

Ideally, maps should make it easier to discover and understand crucial developments in unfamiliar fields. Facilitate research by helping to identify trends and watershed developments, influential actors, etc. Provide context and intellectual history for current developments.

What main challenges do you foresee for designing effective maps of science or science forecasts?

Developing relatively coherent 'theories' of representation, perception, and data spaces that can guide design and lead to generalizable, less ad hoc solutions. At the same time it is crucial to get the details right - there are many design and technical problems that must be solved and balanced to create an effective visualization, (from labeling, to graph layout, navigation, data aggregation) and if any one of them is not handled well, the whole may be unusable. Another challenge is developing viewer literacy and the ability for effective criticism and reflection - moving beyond "wow what a great concept" to genuine discovery.

Questions for Funding Agencies / Clients

What information needs / knowledge management needs do you have? Explain your 'dream tool'.

Which part(s) of your daily work might most benefit from advanced science mapping / forecasting tools?

What would you like to learn / achieve at the workshop?

*Please send the completed document by **Thursday October 19th, 2006** to **Katy Borner** <katy@indiana.edu> and **Elisha Hardy** <efhardy@indiana.edu>*