

Dynamic Network Visualization

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with help from Skye Bender-deMoll, James Moody, Ben Shaw, etc.

Dynamic Networks Are Everywhere

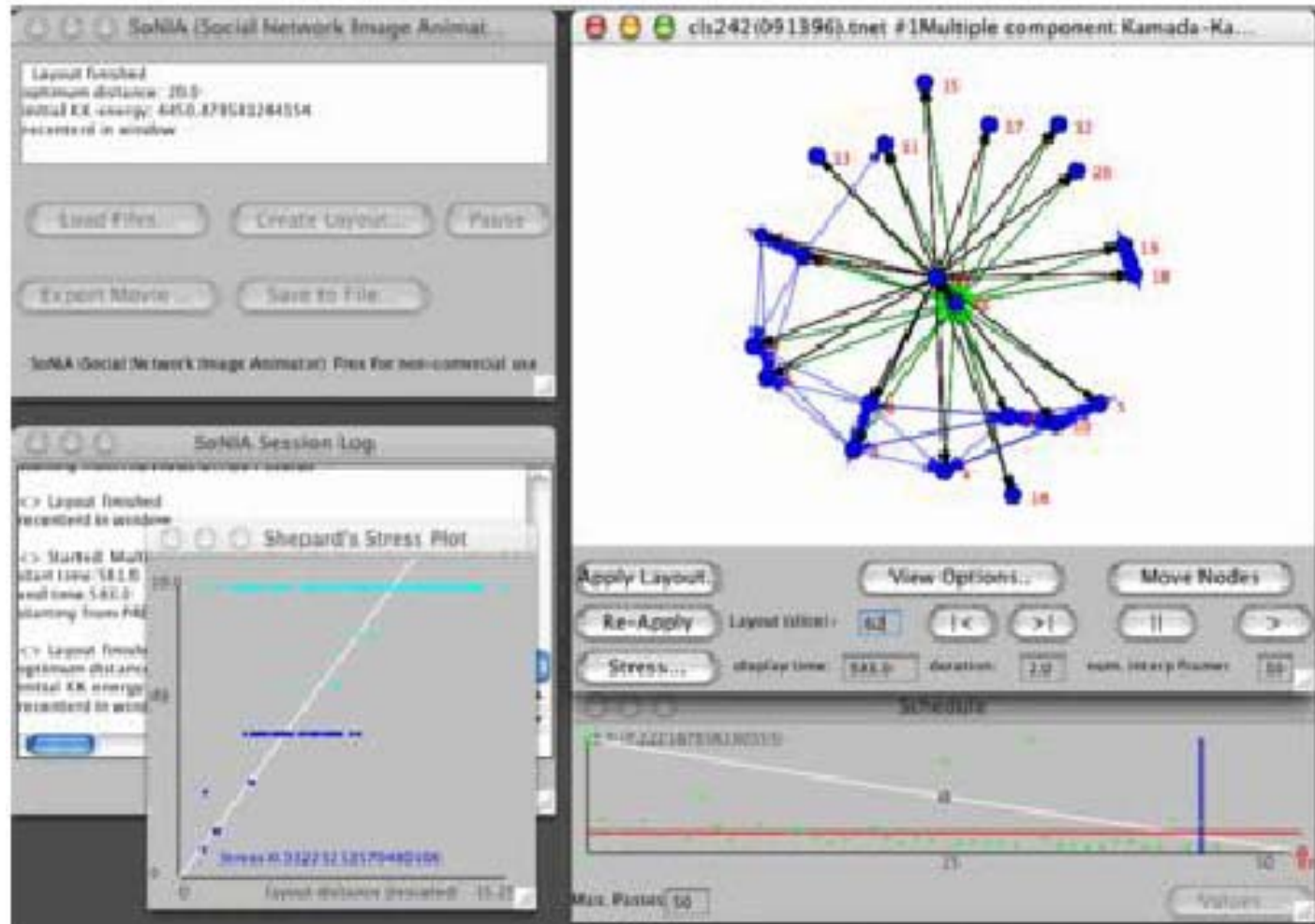
We need a shift in conceptual frame and vocabulary that will enable us to consider distributed forms of interaction.

- From “static” to “process” descriptions of structure
 - > from metaphors of position: strata, hubs, brokers, mavens, etc...
 - > to metaphors of process: ritual, dance, congealing, dispersion, acceleration, bandwagons, piggybacking, etc...
- From static visualizations to dynamic ones.

Challenges: problems of time; thousands of bits of information; complex models; distorted imaging; etc, etc.

The “Art & Science” of Dynamic Network Visualization

-- For thinking behind the SoNIA Software (Social Network Image Animator)
See: <http://www.cmu.edu/joss/content/articles/volume7/deMollMcFarland/>
or <http://sonia.stanford.edu>



Examples

- **Classroom dynamics -- rituals of interaction**
 - Recitation, free time, group work, seatwork, student speeches, conflict.
 - <http://www.stanford.edu/~skyebend/exampleMovies/netSci2.mov>
- **Visualizing Collaboration and Generation of Shared Representations**
 - Ben Shaw's study of NASA engineers developing new Mars rover design ("War-Room" practices)
- **Modeling Social Dynamics**
 - Simulations of common processes -- balance-clustering, homophily, etc
 - Martina Morris's HIV diffusion
 - Paul Ingram's MBA social (out of PPT)

Possible Extensions

- **Physics, Chemistry, and BioChem** - atomic models, molecular change, etc.
- **Social science** - models of social movements, political change, scientific revolution, organizational development, etc.
- **Intelligence** - ritual patterns of cell phone, email, and instant messaging usage, etc.