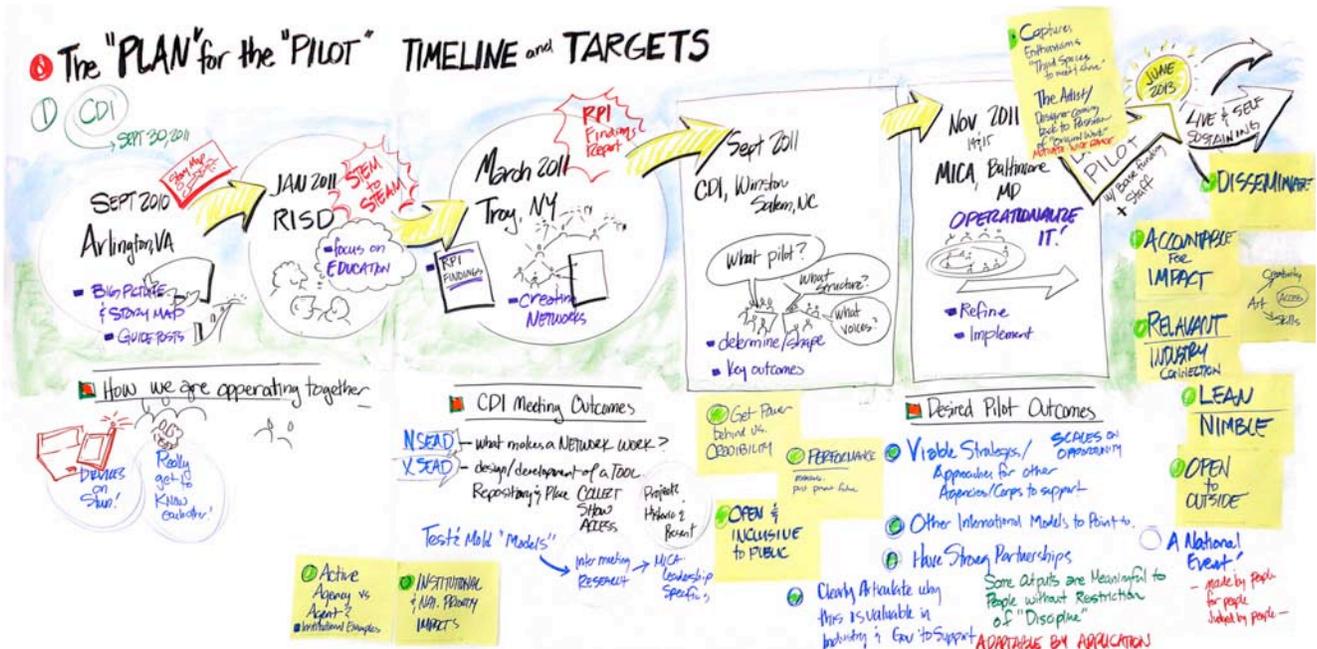


WORKSHOP SUMMARY

Friday, September 30 - Saturday, October 1, 2011



- September 2010 - NSF, Arlington, VA - Big picture, Guide posts, StoryMap
- January 2011 - RISD, Providence, RI - Focus on education - STEM to STEAM
- March 2011 - RPI, Troy, NY - Creating networks - Findings report
- September 2011 - UNC/CDI, Winston-Salem, NC - What pilot? What structure? What voices?
- November 2011 - MICA Baltimore, MD - Refine, implement - Make it operational
- 2012-2013 - Texas A&M University, College Station, TX - Launch the pilot
- June 2013 - Live and self-sustaining

The 24 participants at the CDI workshop included:

- MARIBETH BACK - Sr. Research Scientist; Project leader, Mixed & Immersive Realities Group; Project leader, Industrial Collaborative Environments Team; Fuji Xerox Palo Alto
- ANNE BALSAMO - Research Dir., Annenberg School for Communication & Journalism, Univ. Southern California
- SHAOWEN BARDZELL - Asst. Prof., Human-Computer Interaction Design; Kinsey Inst. Research in Sex, Gender, and Reproduction; Indiana Univ.
- JONAH BOKAER - Choreographer, Media Artist, Social Entrepreneur
- SHELDON BROWN - Prof. Visual Arts; Dir., Ctr. Research in Computing and the Arts; Founder, New Media Arts for the California Inst. Telecommunications and Information Technologies; Univ. California, San Diego
- LEAH BUECHLEY - Asst. Prof., MIT Media Lab; Dir., High-Low Tech research group
- DARAGH BYRNE - XSEAD Developer/Designer; Asst. Research Professor, Arts Media and Engineering, Arizona State Univ.
- DONNA COX - XSEAD Co-PI; Michael Aiken Endowed Chair; Dir., eDREAM Institute; Steering Committee, Dir., Advanced Scientific Visualization Lab; Univ. Illinois, Urbana-Champaign

BARBARA CUTLER - Asso. Prof., Dept. Computer Science; Affiliated Faculty, Curtis R. Priem Experimental Media and Performing Arts Center (EMPAC); Rensselaer Polytechnic Inst.

ALICIA GIBB - Research and Development Lab Dir., BugLabs, New York; Entrepreneur

TRACY HAMMOND - Dir., Sketch Recognition Lab; Assoc. Prof., Dept. Computer Science and Engineering; Texas A&M Univ.

PAMELA L. JENNINGS - Former NSF NSEAD/XSEAD PD; Dir., Brenda and Earl Shapiro Centers for Research and Collaboration, School of the Art Inst. of Chicago

JOANN KUCHERA-MORIN - Dir., Allosphere Research Laboratory, California Nanosystems Inst.; Prof., Media Arts and Technology and Music; Dir., Ctr. for Research in Electronic Art Technology, Univ. California, Santa Barbara

CAROL LAFAYETTE - NSEAD PI; Assoc. Prof., Dept. Visualization, Texas A&M Univ.

MICHAEL D. LORD - NSEAD Fiscal Advisor; Sisel Fellow in Strategy; Dir., China Program; Assoc. Prof. of Strategy, Innovation & International Business; Wake Forest Univ. Schools of Business

KATHERINE MORIWAKI - Asst. Prof. Media Design; School of Art, Media, Technology; Parsons the New School for Design

GUNALAN NADARAJAN - NSEAD Co-PI; Vice Provost, Research and Graduate Studies, Maryland Inst. College of Art

SABRINA RAFF - Assoc. Prof., School of Art and Design, Univ. Illinois, Chicago

THANASSIS RIKAKIS - XSEAD PI; Prof. and founding Dir., School of Arts, Media and Engineering; Arizona State Univ.

BILL SEAMAN - Prof., Duke Univ.; member of Duke Inst. of Brain Sciences; researcher in Visual and Media Studies

BRIAN K. SMITH - Dean, Continuing Education, Rhode Island School of Design

CAROL STROHECKER - NSEAD Co-PI; Dir., Ctr. for Design Innovation; Prof., Winston-Salem State University; Chief Research Officer, Instructor, UNC School of the Arts

NOAH WARDRIP-FRUIIN - Assoc. Prof., Computer Science; Co-Dir., Expressive Intelligence Studio, Baskin School of Engineering; Dir., Playable Media group; Digital Arts and New Media; Univ. California Santa Cruz

STEVEN WRIGHT - NSEAD Workshop Facilitator; Graphic Facilitator/Recorder, Sr. Assoc., Grove Associates Network

Further information about the participants is available at:

http://www.CenterforDesignInnovation.org/Info/NSEAD_CDI_participant_index.pdf

http://www.CenterforDesignInnovation.org/Info/NSEAD_CDI_participants.pdf

Student recorders at the CDI workshop included:

SHELTON CLINARD - Appalachian State University
 LEE GILCHRIST - Winston-Salem State University
 MAGARETT HERDER - Winston-Salem State University
 JULIE Z KOEGL - University of North Carolina School of the Arts
 QITUWRAH LONG - Winston-Salem State University
 CHRIS MAY - Forsyth Technical Community College

Reference materials distributed to the CDI workshop participants included:

- the Executive Report and illustrated StoryMap from the NSF/NEA workshop in September 2010
- an email flyer from RISD describing the STEM to STEAM session on Capitol Hill in June 2011
- the NSEAD "brief"
- an overview of organizational models to inform discussions during the workshop

These materials are available at:

http://www.CenterforDesignInnovation.org/Info/NSEAD_CDI_materials.pdf

The collaborators have reflected discussions during and following the workshop here:

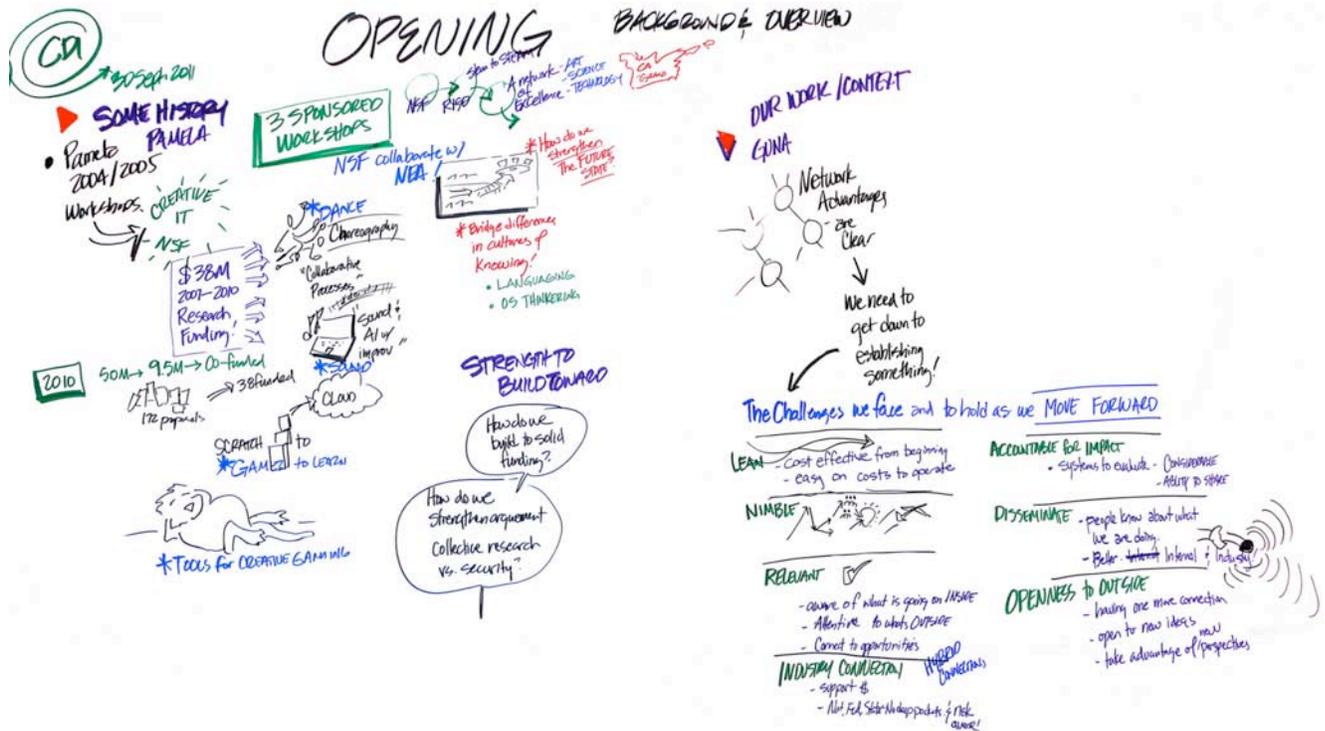
<http://www.viz.tamu.edu/faculty/lurleen/main/NSEAD/>



WORKSHOP DAY 1: Friday, September 30

Pamela Jennings: NSEAD + XSEAD overview

Pamela described the roots of NSEAD and XSEAD in the NSF CreativIT program, which provided \$38M for research from 2007 until 2010. She reviewed the three prior workshops (at NSF, RISD and RPI) that laid the ground for discussions at CDI. Pamela introduced the NSEAD PI, Carol LaFayette, and co-PIs Carol Strohecker (host of the CDI workshop) and Gunalan Nadarajan (to host the workshop at MICA, Maryland Institute College of Art, on November 14 and 15, 2011).



Gunalan Nadarajan: Introductory address

Guna reminded the group of advantages in forming a network to support and advocate for the broadly interdisciplinary work that we do. He observed that it is challenging to shape a diverse, inclusive context supporting research, education and creativity. He asserted the needs to remain lean, nimble, relevant, accountable and open to the outside. Guna also suggested that we would benefit from connections to industry and must effectively disseminate results of our work.

Steven Wright: Orientation

Steven introduced his role as "graphic facilitator" and involved the participants in beginning to envision outcomes of the network. Notions of humanist literacy, going viral, fluid spaces and self-sufficiency began to enter the dialog. "The President loves it" emerged as a criterion that became a refrain during the two-day workshop.





Carol LaFayette, Michael Lord: Organizational structures and fiscal strategies

Carol and Michael presented their "NSEAD_model_handouts.pdf" document (available via the links on page 2).

They used the following criteria for evaluating the structures of existing organizations:

- Facilitates visionary (not just service) leadership
- Adapts to change for sustainability and long-term growth
- Collaborative, cross- disciplinary and inter-disciplinary work is fundamental
- Provides individual incentive for participation (leadership, members, new members, new leaders)
- Enables a blend of funding resources

They called attention to some tensions discovered through research of prior organizations:

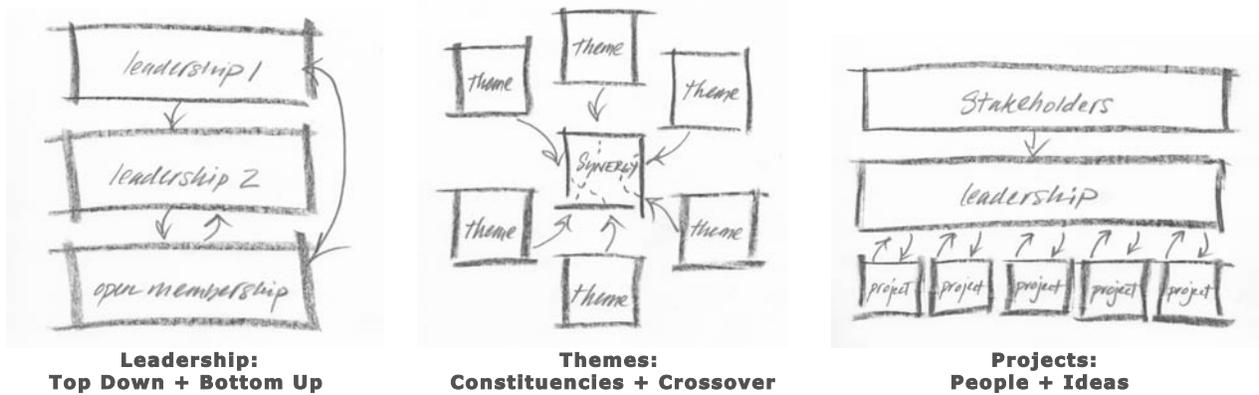
- Visionary leadership vs. effective practical management of network
- Integration (e.g., across disciplines & organizations) vs. specialization
- 'Not Invented Here' syndrome, trust and communication issues
- Open source collaboration vs. proprietary idea / IP "ownership"
- Non-profit perspectives vs. corporate partners' perspectives

They considered a range of organizational models reflecting different philosophies and structures:

- Leadership model
- Membership model
- Theme/Constituency model
- Grants & Sponsorship model
- Project-oriented model
- Project Funding
- Open model
- Translational Science & Medicine (including Engineering & Design)
- Semi-open model
- Others: From Movie Studios to iApps to Wikimedia...
- Closed, proprietary model



The comparisons led to an important question having to do with the benefits and disadvantages, rewards and costs of Centralization / Integration vs. Decentralization / Autonomy / Specialization. This question is reflected in three structures illustrating approaches to consider for NSEAD:



These models illustrate relations in a leadership structure facilitating both top-down and bottom-up actions, methods for crossover among self-organized constituencies, and the use of projects to bring together people and ideas.

XSEAD presentation via Skype, Q&A

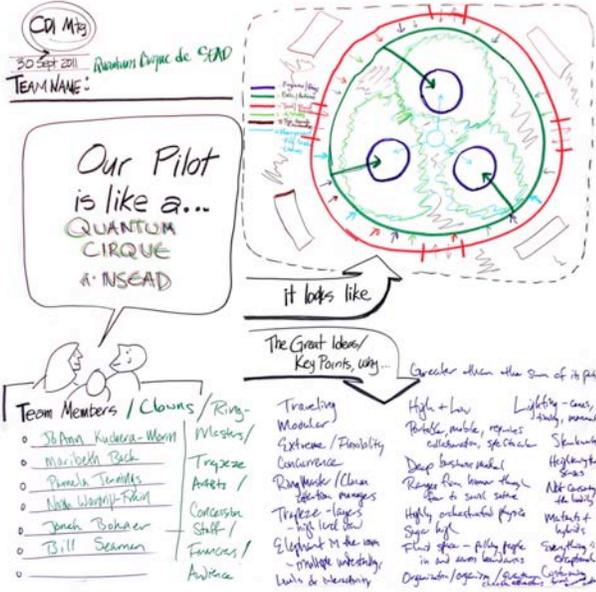
Thanassis Rikakis, PI of the XSEAD project, introduced co-PI Donna Cox and lead developer Daragh Byrne. They described the planned “virtual eXchange to support networks of creativity and innovation amongst Sciences, Engineering, Arts and Design.” They explained XSEAD’s role as a virtual portal for content archival and dissemination, fed by the NSEAD “people network” for content creation.

As of September, the XSEAD collaborators’ thinking about the technical platform included four layers: to support content review, editorial processes, technical functions, and creation of the portal environment through design, development and implementation phases. The collaborators presented a timeline for this work, extending through August 2013. The discussion focused on how XSEAD and NSEAD will dovetail, which we will discuss further at the MICA workshop.

Elements, initiatives and leadership criteria for an optimal network structure

Steven Wright and Michael Lord facilitated as the workshop participants convened in subgroups to imagine and articulate possible organizational structures for the NSEAD network. The subsequent presentations yielded three diagrams and sets of criteria:





What's happening

* Instead of Art & Science think of it as a complex system - using physics relations

with playful part with assemblage of equipment & expertise

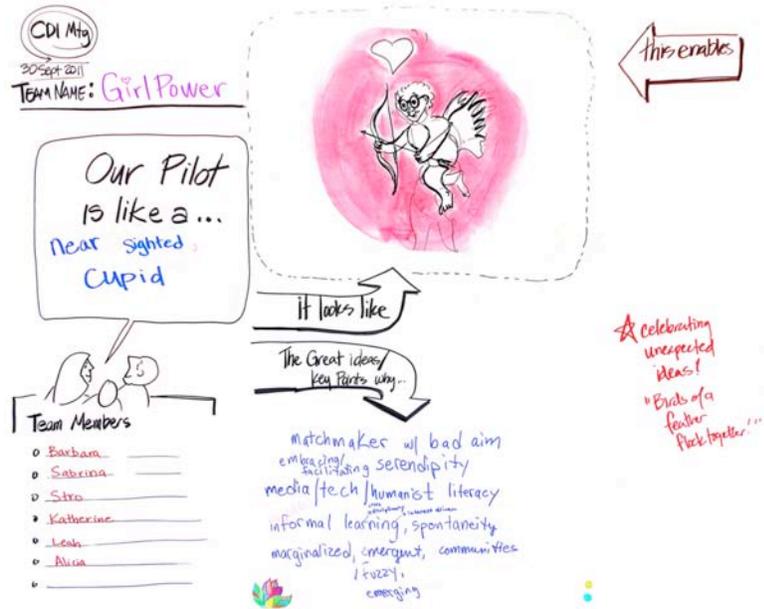
* organized chaos - chaos has a speciality in a chaotic state

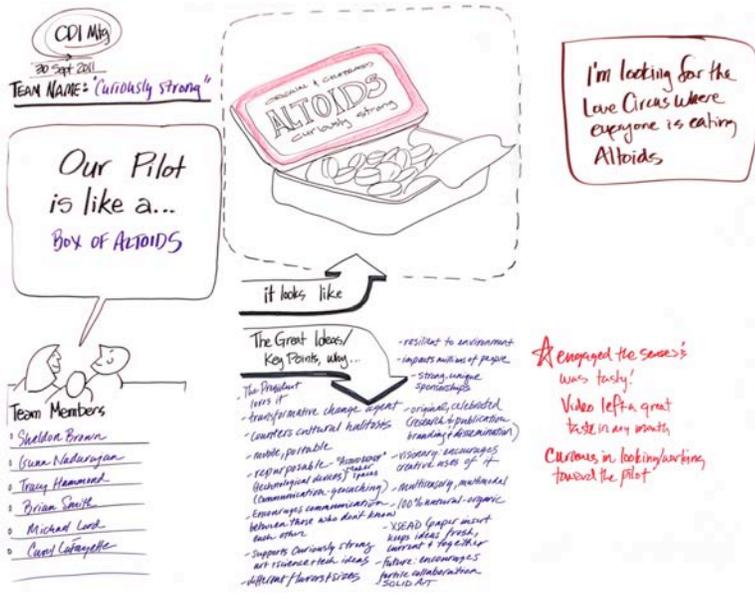
NETWORK MODEL: Organized dynamic system - Homeostasis

Instead of focusing on Art & Science, we think of the network as a complex system defined by physics relations inviting playful exploration. The whole is greater than the sum of the parts. The system is modular, flexible and dynamic. It relies on concurrence, multiple levels of interactivity and engagement, and a deep business model. The circus metaphor suggests roles such as the ringmaster coordinating the complex set of activities, barkers bringing people in, and clowns developing strategies for dissemination and redefining hierarchies and categories.

NETWORK MODEL: Matchmaker

A Cupid with bad aim becomes a metaphor for a "fuzzy logic" sort of approach to facilitating partnerships for collaborative projects. Familiar combinations of disciplines and organizations will no doubt continue to be fruitful, but the occasional "near miss" may turn out to be intriguingly productive. This model celebrates serendipity and explores the value-add of marginal or emergent communities. A "cirque" group member observed that a network participant in the role of a clown could literally look or act like a near-sighted Cupid.





NETWORK MODEL: Curiously strong

This model celebrates the network's role as a transformative change agent. It emphasizes mobility and multimodality. Members come in different flavors and sizes. The network encourages communication among those who don't already know each other, ultimately impacting millions of people. XSEAD is the paper insert, keeping ideas fresh, current and together.

WORKSHOP DAY 2: Saturday, October 1, 2011

Discussion of the network, toward consensus on a model

The group identified creators, funders, partners and facilitators as stakeholders of the network. The constituents will include scientists, artists, and members of both academic and DIY cultures. Constituents will come from both nonprofit and profit-making sectors, including academia, government and private industry. Many of the constituents will be educators. Funders will range from Federal agencies to local foundations. Facilitators will help to engage funding agencies and the broader public. The network will need to engage lobbying lobbyists and policymakers. Individuals, cultural institutions such as museums, industry members, entrepreneurs and journalists will all have an interest and role.



Workshop participants identified objectives and goals for the network, including points such as development of strategies for matchmaking, integration of the Art+Science field into the K-12 curriculum, publishing 20 articles in the next year with coverage in the popular media, and reconciling network activities with criteria for academic promotion and tenure.

Bill Seaman consolidated points from the discussion into this list of topics and methods that the network may engage:

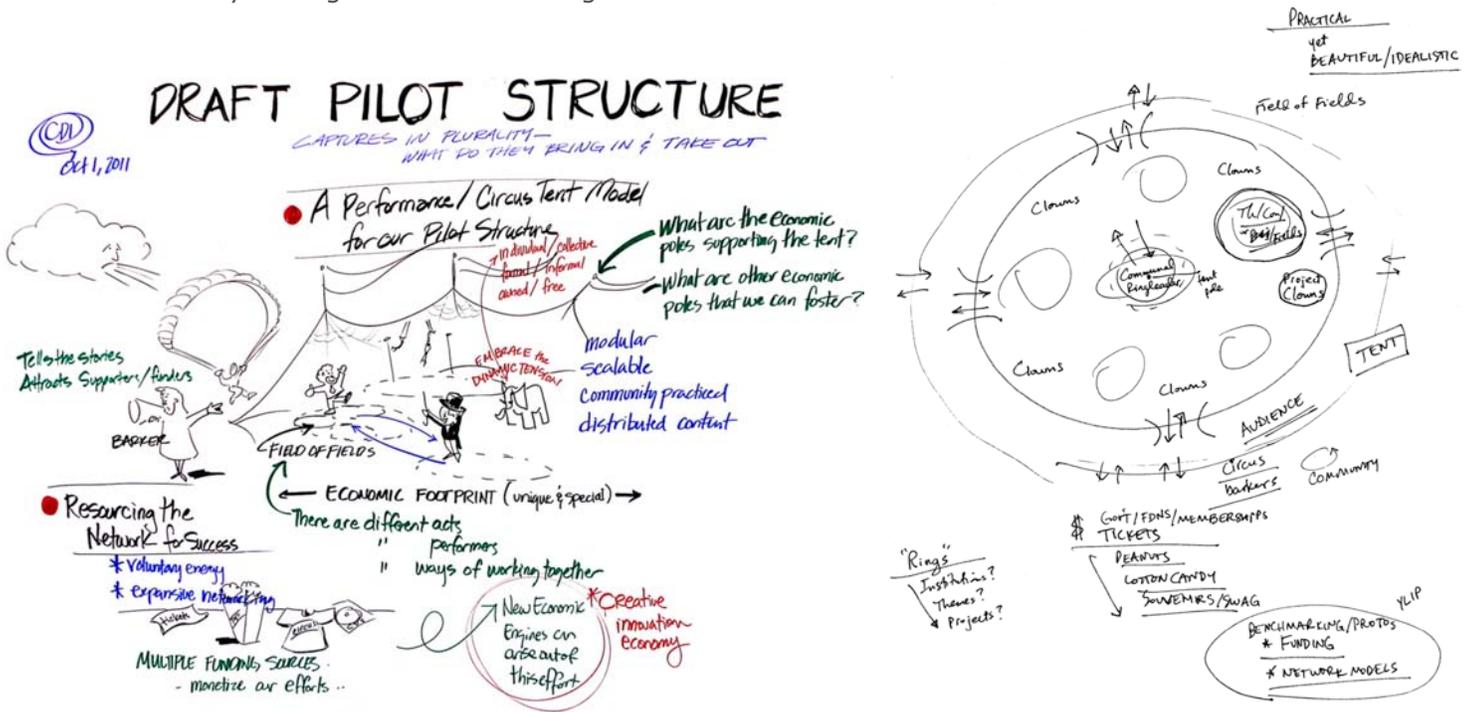
- development of new forms of artificial intelligence and computational practices;
- exploration of robotics;
- creation of intelligent environments;
- exploration of consciousness studies;
- study of science as it relates to understandings of the body;
- development of new forms of interface and sensing modalities;
- creation of new experience focusing on phenomenology, interactivity and intra-activity;
- exploration of new materials born of scientific inquiry;
- abstraction of particular material practices in the service of art and architectural production — e.g. biological processes, physics, and nanotechnological processes;
- exploration of new technologies for artistic purposes — e.g. locative media, virtual reality, augmented reality, etc.;
- use of game strategies;
- language games / math games and instantiations of knowledge/concepts through play;
- employment of media archeology /variantology and its relations as art content;
- mining of the history and philosophy of science as subject matter;
- exploration of databases and/or data mining;
- employment of visualization strategies and/or the abstractions thereof;
- use of telematic and locative potentials;
- interest in emergence, generative strategies and dynamic/non-fixed works of art;
- works of social and cultural critical reflection focusing on scientific issues;
- political reflection critiquing scientific research;
- creativity and innovation arising out of scientific inquiry.

Through the discussion a consensus emerged to use the performance / circus tent model as an overall metaphor for the network structure. Workshop participants saw strength in the concept of plurality inherent in this model, as it pertains to both people and programs. We considered what the future network members will bring in and what they will get back out, as guiding questions that address motivation and values of diversity, quality and sustainability.

Workshop participants noted tensions between individual vs collective, formal vs informal, and owned vs free aspects of the collaborative work. We were particularly concerned with the “economic poles” supporting the tent and wondered what currently unknown or nonexistent “poles” the network might foster. This consideration prompted discussion of the creative / innovation economy and questions of what new economic engines the network might generate.



As the discussion wound down, we saw that Michael Lord's "plan view" of the structural model was remarkably analogous to Steven Wright's caricatured overview:



Michael's diagram shows a "practical yet beautiful/idealistic field of fields" with the ringleader at the center, clowns working the periphery, the audience at the edge with barkers just beyond and the community ever-present. The borders are permeable so constituents can move easily in and out. The rings may be institutions, themes or projects. Funds come from government, foundations, memberships and sales of event tickets and other outputs of the network ("peanuts, cotton candy, and souvenirs/swag").

Jonah Bokaer assembled and shared a financial model in the form of a spreadsheet that reflected the discussion. Suggested income streams include grants, program revenue, a Board, individual members as from DIY communities, commissioned content, perhaps art sales, an annual event, publications and program revenue. The spreadsheet also suggests a view of economic potentials through breaking out various components: inventions; constituents in the realms of engineering, arts, design and media; 2- and 3-dimensional IP; royalties; and prizes and awards.

Summary

Steven Wright captured the group's intentions for ongoing efforts, such as bridge building, exploring analogous communities, identifying groups we should foster, initiating a young leaders incubator program, developing stakeholder circles, identifying funding engines, enable re-envisioning of cultures, and content creation to push new technologies and pose deep transdisciplinary questions.



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