# Reflections on CNCC

1. Multidisciplinarity
2. International collaboration

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# Transforming the Sciences

- Large-scale international collaboration is becoming more accessible… and necessary
- High-impact and transformative research is increasingly the product of successful collaborative team work.

"International cooperation in science is not a luxury, it is a necessity – and the foundation for the future."

*Arden L. Bement, Jr.*
*NSF Director, May 2006*

# Move to Team Science

Studies of 19.9 million research articles over 5 decades as recorded in the Web of Science database, and an additional 2.1 million patent records from 1975-2005 found three important facts:

1. For virtually all fields, research is increasingly done in teams.

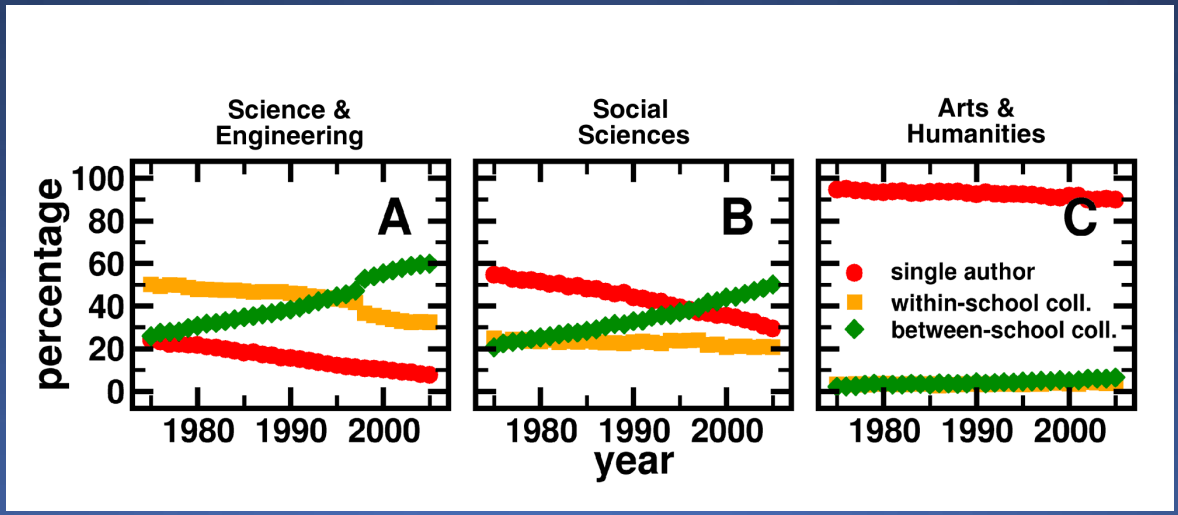
2. Teams typically produce more highly cited research than individuals do (accounting for self-citations), and this team advantage is increasing over time.

3. Teams now produce the exceptionally high impact research, even where that distinction was once the domain of solo authors.

Source: Noshir Contractor, citing Wuchty, Jones, and Uzzi, 2007a, 2007b

# Move to *Virtual* Team Science

- Team science is increasingly composed of investigators located at different universities.
- These “virtual communities of scholars” produce higher impact work than comparable co-located teams or solo scientists.
- This change is true for all fields and team sizes, as well as for research done at elite universities




Source: Noshir Contractor, citing Jones, Wuchty, Uzzi, 2008

# Many Dimensions to Collaboration

Dimensions of Collaboration

- Across disciplines
- Across funding agencies
- Across countries

Evaluation and assessment:

- ADDED VALUE?

Collaboration requires enhanced infrastructure

- virtual collaboratories

CYBERINFRASTRUCTURE

# Cyberinfrastructure

Peer review on a global scale (virtual panel meetings), virtual lab meetings, etc

# International Collaboration: Issues and Concerns

- Ethics, confidentiality, human subjects and informed consent
- Comparability of data
- Inherent differences in means of collaboration (face- to- face or virtual collaborations across the globe)
- Cross-cultural communication and sensitivity
- Underlying concerns about competition with other nations, especially on an economic scale
- Intellectual property rights, licensing, patents

# International Collaboration: Outcomes and Opportunities

## Individualized Models of International Collaboration

1. NSF funded (sub-award or exodus)

2. Partnered review and funding (NSF-AHRC, BMBF, etc)
   - One project submitted to both agencies,
   - One agency conducts review, both accept decision
   - Each country funds their own PI portion

3. Shared review process, individual countries contribute to projects of interest

European Science Foundation

## Strength of CNCC?

- Innovative, cutting-edge issues
- Topics NOT business-as-usual
- Explicitly multidisplinary and international
- Need better dissemination of opportunities and ideas
- Need more explicit ways to keep momentum of the goals and the gains

# Thank You!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