

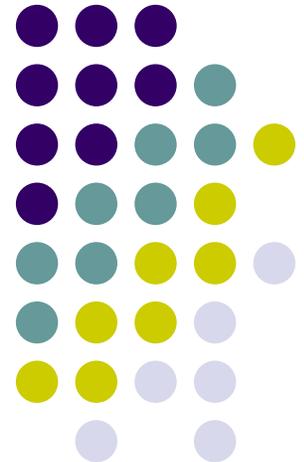
# The Nature of Work: Kinds of Research, Location in Network, and Project Profile--and Desires for Change to Stimulate Innovation

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**Jerald Hage  
Jonathon Mote  
Center for Innovation  
University of Maryland  
College Park, Maryland  
United States of America**



<http://www.bsos.umd.edu/socy/centerforinnovation/>



# Focus of the evaluation: Researchers recommendations for organizational change



## Focus of the evaluation: Researchers recommendations for organizational change

The source of content about what should be changed: the management of innovation literature (e.g. Brown and Eisenhardt, 1995) that recommends

1. complex research teams
2. high communication
3. cross-fertilization

The source of how to contextualize the recommendations of the researchers:

1. nature of the research work
2. location in the network
3. Jordan's profiles of research projects (Jordan, 2006)

*Observation: We can use organizational theory to frame the evaluation and evaluation to build new theory*

# Kinds of Research Work



**Based on a question that determined the percent of time spent on either increased understanding or improving the functionality of physical instruments**

60 percent of time in understanding:	basic scientists	N = 16
40 to 60 in both:	mixed	N = 24
60 percent of time in improving functionality:	applied	N = 17

*Observation: Even the familiar distinction between basic and applied scientific research has to be adapted to the specific situation. In STAR, the problem of sensors is huge.*

# Validation of Classification



## Applied Scientists

designs of new sensors  $r = .39$   
straightforward projects  $r = .29$   
improve productivity  $r = .28$

## Basic Scientists

new algorithms  $r = .22$   
training  $r = .23$   
evolutionary  $r = .39$

*Observation: It is important to validate the classification that one uses.*

# Nature of Research Work and Desires for Change



*Applied scientists* wanted the most change and especially in the process attributes associated with innovation:

- Time to think
- Freedom to pursue new ideas
- Cross-fertilization
- Communication

*Basic scientists* want some change on many of the same process attributes.

The *mixed basic/applied* category wanted the least amount of change and then mainly in the areas of time to think and freedom to pursue new ideas.

*Observation: These findings suggest increasing the amount of basic research opportunities for the applied scientists might be desirable*

# Network Location and Desires for Change

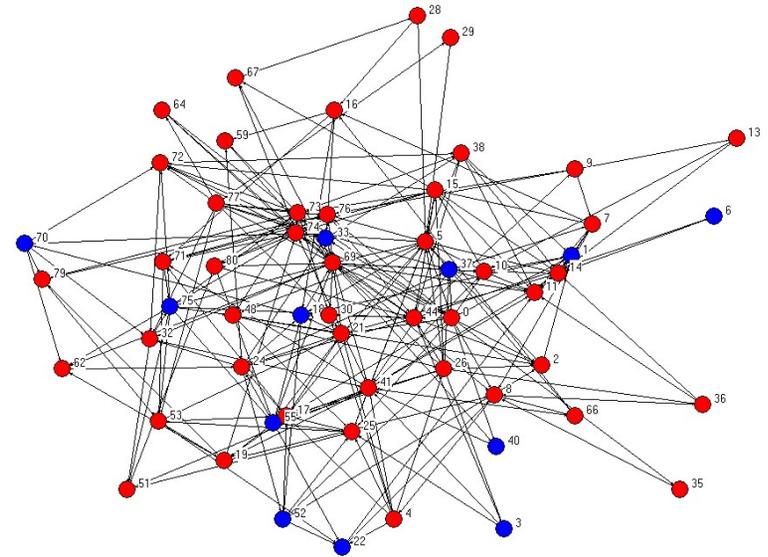


Individuals who were classified as high in closeness desired changes above 20 percent in three attributes:

- Time to think creatively
- Freedom to pursue new ideas
- Internal communication.

At STAR, researchers with high closeness are strongly associated with the development of new products.

STAR Project Network  
(managers indicated in blue)





# Validation of Classification

Those researchers that are low in closeness to all other projects reported wanting more:

- Teamwork and collaboration
- Internal communication
- Commitment to critical thinking

*Observation: These findings suggest the desirability of more cross-functional teams or at minimum more cross-functional meetings*

# Jordan's Theory of Profiles Based on Strategic Choices of the Research



## A Typology of Scientific and Technological Research Projects:

- small scope incremental research projects
- small scope revolutionary research projects
- large scope incremental research projects
- large scope revolutionary research projects

## Empirical Findings Based on a Series of Questions:

- small, simple and incremental N = 25
- small, complex, and revolutionary N = 16
- large projects with different goals N = 15

*N = number of individuals and not number of projects*

*Observation: the dominant kind of research project at STAR is small.*

# Research Profile and Desires for Change (1)



The large projects wanted the most change and in two areas:

Process attributes associated with innovativeness

- time to think creatively
- explore new ideas
- critical thinking

Attributes associated coordination

- more decisive managers
- more respect
- better relationships with sponsors

*Observation: many of the applied scientists are located in large projects where we find similar patterns in the desires for change*

# Research Profile and Desires for Change (2)



The small projects wanted less change but all of them wanted more freedom to pursue new ideas and cross-fertilization of ideas

The small, simple and incremental projects wanted more internal communication and planning

The small, complex and revolutionary projects wanted more time to think.

*Observation: we explored several different ways of categorizing the research profiles, straightforward vs. complex and complex vs. large, which reinforce our interpretations above. Both complexity and large projects have internal tensions.*

# Recommendations



- increase the amount of basic research in the applied group
- improve the closeness of some via more teams or meetings
- concentrate on the coordination needs of large projects
- in general increase cross-fertilization and provide time to think

Basic stumbling blocks in the real life of STAR:

- too many projects and too little time
- problem of overcoming cognitive distance in research teams and networks

*Observation: We are trying to develop ideas about how to handle blocks*

# Strategy of Organizational Change



Discuss the findings with the researchers to explore the creation of new policies

Experiment with new policies in only a small part of the organization

If the new policies require learning new behaviors, use in-service training programs

Have those involved in the experiments critique them and revise accordingly

*Observation: Lessons learned in applying organizational theory in developing countries (see Hage and Finsterbusch, 1987)*

# Comments and questions



*Please contact us if you have questions, suggestions, or opportunities to collaborate.*

- *Jerald Hage: Email [hage@socy.umd.edu](mailto:hage@socy.umd.edu), phone 301-405-6437.*
- *Jon Mote: Email [jmote@socy.umd.edu](mailto:jmote@socy.umd.edu), phone 301-405-9746.*

Thank you!