

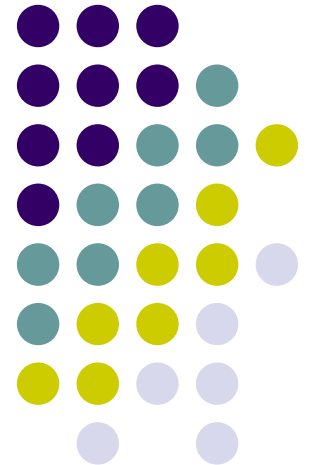
The Nature of Work: Kinds of Research, Location in Network, and Project Profile--and Desires for Change to Stimulate Innovation

Evaluation 2007 – Baltimore, MD

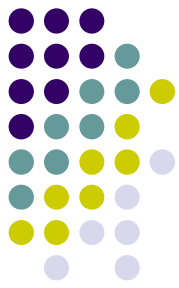
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Focus of the evaluation: Researchers recommendations for organizational change



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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

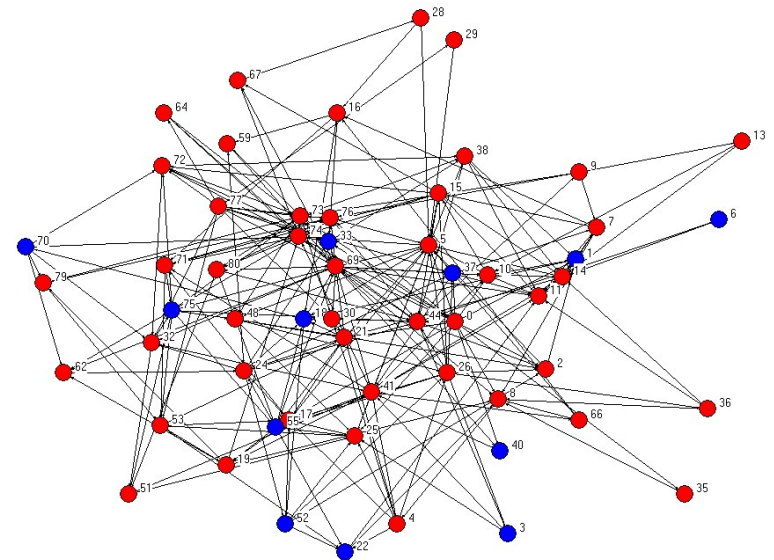


Individuals who were classified as high in closeness desired changes above 20 percent in three attributes:

- 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.

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Thank you!