Proposal for General Examination
Benjamin Mako Hill
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Introduction

This examination will cover three topic areas addressing the social scientific study of open and user innovation communities through — and with applications for — technological design. The objective is to inform a research program aimed at understanding the organizational and social structure around users' decisions to contribute to innovation communities — including free, libre, open source software, and peer production projects — through the evaluation of technological designs and with implications for the design of technological support systems.

As required by the accepted interdepartmental degree proposal, the readings in this proposal are divided into three areas.

The first area is the main area which covers technological innovation, entrepreneurship, and strategy (TIES) with an added emphasis on the study of open and user innovation. The reading list includes core texts from the study of the management of technological innovation as well as key readings from the closely connected literatures on entrepreneurship and strategic management. The list is adapted from, and represents a core of, recent generals reading lists from the TIES group at the MIT Sloan School of Management. It also includes a more focused set of readings from the social scientific study of user and open source innovation and free and open source software.

The second area provides a disciplinary grounding in organizational and economic sociology. The reading list includes a set of texts from major streams in organization theory and the sociological study of organizations as well as a list of core readings from economic sociology. It provides a basis to understand the social structure underlying the organization of open and user innovation as well as a background from which to understand the fundamental sociological mechanisms through which these communities operate.

The third area is technology design for cooperation, community, and creativity. The readings focus on the study of design for computer supportive cooperative work as well as related research in the study of design for social media and social computing, and for creativity, learning, and innovation. The reading list emphasizes the social and organizational context of technology and its relationship to social structure and innovation in particular. The texts suggest ways to understand how information technology structures cooperative work, how these tools can be evaluated, and how they might be designed to more effectively facilitate innovation, creativity, and cooperative work.
Main Area: TIES and Open Source

Examiner
Eric von Hippel
Professor of Technological Innovation
MIT Sloan School of Management

Description
The first area is the main area which covers technological innovation, entrepreneurship, and strategy (TIES) with an added emphasis on the study of open and user innovation. The reading list includes core texts from the study of the management of technological innovation as well as key readings from the closely connected literatures on entrepreneurship and strategic management. The list is adapted from, and represents a core of, recent generals reading lists from the TIES group at the MIT Sloan School of Management. It also includes a more focused set of readings from the social scientific study of user and open source innovation and free and open source software.

Written Requirement
A paper of publishable quality, as evaluated by Professor von Hippel.

Examiner's Signature: __________________________
TIES and Open Source Reading List

Management and Technological Innovation

1.1 Overviews

1.2 Innovation Process

1.3 Industry Dynamics

1.3 Patterns of Technological Change


1.4 Innovation and Learning


1.5 Adaptation and the Failure of Firms as a Result of Technical Change


### 1.2 Innovation and Competition


### 1.7 Product Development

*Management Science* 52:1015-1030.

### 1.8 Human Side of Technological Innovation


### 1.9 Innovation in Services


60. Quinn, James Brian. 1992. *Intelligent Enterprise: A Knowledge and Service Based Paradigm for Industry*. Free Press.(Chapters 1, 7, 8)


### 1.10 Science and Innovation


### 1.11 Intellectual Property


74. Lessig, Lawrence. 1999. *Code and Other Laws of Cyberspace*. San Val. (Chapter 7 and 10)


1.12 Technology Transfer


1.13 Networks and Geography of Innovation


1.14 Economic Perspectives


1.15 Sociological Perspectives


Entrepreneurship

2.1 Overviews


2.2 Classics


2.3 Source of Entrepreneurship: Origins


2.4 Sources of Entrepreneurship: Spin-offs and Careers


2.5 Entrepreneurial Strategies


2.6 Institutional Approaches to Entrepreneurship


2.7 Networks and Entrepreneurship


2.8 Entrepreneurial Capabilities


2.9 Ecology of Entrepreneurship


Strategic Management

3.1 Overviews and Classics

3.2 Resources and Dynamic Capabilities

3.3 Decision Making and Routines
147. Bingham, Christopher B., Kathleen M. Eisenhardt, and Jason P. Davis. 2009. Opening the black box: What firms explicitly learn from their process experiences.

**User and Open Source Innovation**

4.1 User Innovation

(SKIM)

4.2 Free/Libre and Open Source Software

4.3 Motivation


4.4 Open Source and Organizations


Organizational and Economic Sociology

Examiner
Jason Davis
Assistant Professor of Technological Innovation, Entrepreneurship, and Strategic Management
MIT Sloan School of Management

Description
This area provides a disciplinary grounding in organizational and economic sociology. The reading list includes a set of texts from major streams in organization theory and the sociological study of organizations as well as a list of core readings from economic sociology. It provides a basis to understand the social structure underlying the organization of open and user innovation as well as a background from which to understand the fundamental sociological mechanisms through which these communities operate.

Written Requirement
A 24-hour written exam, administered by Professor Davis.
Organizational and Economic Sociology Reading List

Organizations

5.1 Overviews and Classics

177. Scott, W. Richard, and Gerald F Davis. 2006. Organizations and Organizing: Rational, Natural and Open Systems Perspectives. 1st ed. Prentice Hall. (Chapters 1-5, SKIM)

5.2 Resource Dependence


5.3 Institutional Approaches


5.4 Ecological Approaches


5.5 Transaction Cost Economics

5.6 Social Movements and New Forms

Economic Sociology

6.1 Overviews

6.2 Sociology Classics
6.3 Status


6.4 Networks, Social Capital and Brokerage


6.5 Role and Category Pressures


Technology Design for Cooperation, Community, and Creativity

Examiner
Mitchel Resnick
LEGO Papert Professor of Learning Research
Academic Head, Program in Media Arts and Sciences
Program in Media Arts and Sciences

Description
The third area is technology design for cooperation, community, and creativity. The readings focus on the study of design for computer supportive cooperative work as well as related research in the study of design for social media and social computing, and for creativity, learning, and innovation. The reading list emphasizes the social and organizational context of technology and its relationship to social structure and innovation in particular. The texts suggest ways to understand how information technology structures cooperative work, how these tools can be evaluated, and how they might be designed to more effectively facilitate innovation, creativity, and cooperative work.

Written Requirement
A 24-hour written exam, administered by Professor Resnick.
Technology Design Reading List

Design for Cooperative Work

7.1 Overviews


7.2 Theory


7.3 Communication

7.4 Awareness


7.5 Design Concerns


Social Computing

8.1 Online Communities


8.2 Motivativing Participation

8.3 Large Communities

Design for Creativity

9.1 Constructionism and Learning
9.2 Creativity


9.2 Examples and Case Studies


Committee Biographies

Eric von Hippel

Eric von Hippel's research discovers and explores patterns in the sources of innovation and develops new processes to improve the "fuzzy front end" of the innovation process—the end where ideas for breakthrough new products and services are developed. In his most recent book, *Democratizing Innovation* (MIT Press / April 2005), von Hippel shows how communities of users are actually becoming such powerful innovation "engines" that they are increasingly driving manufacturers out of product development altogether—a pattern he documents in fields ranging from open source software to sporting equipment. This discovery has been used to understand the innovation process better and to develop new innovation processes for industry. He is currently leading a major research project to discover how these user innovation communities work, and how and whether the same principles might extend to many areas of product and service development.

In addition, von Hippel is working with governmental and academic colleagues in the Netherlands, Denmark and the UK to develop new and modified governmental policies appropriate to the newly emerging innovation paradigm of user-centered innovation.

Dr. von Hippel is chair of Benjamin Mako Hill's interdepartmental PhD program committee.

Jason Davis

Jason Davis is an Assistant Professor of Strategy in the MIT Sloan School of Management. Jason's work focuses on the role of organizational structures and processes in competitive strategy, innovation, and entrepreneurship. Using a combination of inductive multi-case studies and simulation modeling, Jason draws upon diverse perspectives such as complexity theory, organization theory, economic sociology, and cognitive science to understand strategy and organizations in highly dynamic environments.

Jason's current research focuses on the organization of collaborative innovation between firms in the computing and communications industries. Using data collected in the field, current projects examine the leadership processes, collaborative networks, and temporal structures underlying inter-organizational relationships. His other research has explored how entrepreneurial firms develop the cognitive content of organizational processes, and how the amount of organizational structure shapes firm adaptation.

Jason earned PhD and MA degrees from Stanford University, where his research was supported by the National Science Foundation. His work experience includes roles in alliance management and sales management in semiconductor and hardware firms, and strategy consulting to multiple high-tech and biotech firms. Jason earned MS and SB degrees from Caltech and MIT where he did thesis research in computation theory and molecular biology.

Mitchel Resnick

Mitchel Resnick, LEGO Professor of Learning Research and head of the Lifelong Kindergarten group at the MIT Media Laboratory, explores how new technologies can engage people in creative learning
experiences. Resnick's research group developed the "programmable brick" technology that inspired the LEGO MindStorms robotics kit. He co-founded the Computer Clubhouse project, a worldwide network of after-school centers where youth from low-income communities learn to express themselves creatively with new technologies. Recently, Resnick's group developed Scratch, an online community where children program and share interactive stories, games, and animations. Resnick earned a BA in physics at Princeton University (1978), and MS and PhD degrees in computer science at MIT (1988, 1992). He worked as a science-technology journalist from 1978 to 1983, and he has consulted throughout the world on creative uses of computers in education. He is author of *Turtles, Termites, and Traffic Jams* (1994), co-editor of *Constructionism in Practice* (1996), and co-author of *Adventures in Modeling* (2001).

Dr. Resnick is member of Benjamin Mako Hill's interdepartmental PhD program committee and head of the Media Arts and Sciences academic program.