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 suggests 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

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Description

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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. Pavitt, Keith. 1984. "Sectoral patterns of technical change: Towards a taxonomy and a theory." *Research Policy* 13:343-373.
2. Roberts, Edward B. 1988. "What we've learned: Managing invention and innovation." *Research Technology Management* 31:11-29.
3. Mowery, David C., and Nathan Rosenberg. 1999. "The Institutionalization of Innovation, 1900-1990." P. Chapter 2 in *Paths of Innovation: Technological Change in 20th-Century America*. Cambridge University Press.
4. Utterback, James M. 1997. *Mastering the Dynamics of Innovation: How Companies Can Seize Opportunities in the Face of Technological Change*. Harvard Business School Press. (Especially the first chapters)
5. Van de Ven, Andrew H. 1986. "Central Problems in the Management of Innovation." *Management Science* 32:590-607.
6. von Hippel, Eric. 1988. *The Sources of Innovation*. New York, NY: Oxford University Press.
7. Rosenberg, Nathan. 1994. *Exploring the Black Box: Technology, Economics, and History*. Cambridge University Press.

1.2 Innovation Process

8. Schumpeter, Joseph A. 1934. *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*. Harvard University Press.(Chapter 1)
9. Schumpeter, Joseph Alois. 1949. *Capitalism, socialism, and democracy*. Harper. (Chapter 7 on "creative destruction")
10. Sutton, Robert I., and Andrew Hargadon. 1996. "Brainstorming Groups in Context: Effectiveness in a Product Design Firm." *Administrative Science Quarterly* 41:685-718.
11. Galunic, D. Charles, and Simon Rodan. 1998. "Resource recombinations in the firm: knowledge structures and the potential for schumpeterian innovation." *Strategic Management Journal* 19:1193-1201.
12. Fleming, Lee. 2001. "Recombinant Uncertainty in Technological Search." *Management Science* 47:117-132.
13. Miner, Anne S., Paula Bassoff, and Christine Moorman. 2001. "Organizational Improvisation and Learning: A Field Study." *Administrative Science Quarterly* 46:304-337.
14. Katila, Riitta, and Gautam Ahuja. 2002. "Something Old, Something New: A Longitudinal Study of Search Behavior and New Product Introduction." *The Academy of Management Journal* 45:1183-1194.
15. Baker, Ted, and Reed E. Nelson. 2005. "Creating Something from Nothing: Resource Construction through Entrepreneurial Bricolage." *Administrative Science Quarterly* 50:329-366.

1.3 Industry Dynamics

16. Arrow, Kenneth. 1962. "Economic Welfare and the Allocation of Resources for Invention." in *The Rate and Direction of Inventive Activity*, edited by Richard R Nelson. Princeton University Press.

17. Rogers, Everett M. 1962. *Diffusion of Innovations*. Free Press.
18. Utterback, James M., and William J. Abernathy. 1975. "A dynamic model of process and product innovation." *Omega* 3:639–656.
19. Utterback, James M., and Fernando F. Suárez. 1993. "Innovation, competition, and industry structure." *Research Policy* 22:1-21.
20. Klepper, Steven, and Kenneth L Simons. 1997. "Technological Extinctions of Industrial Firms: An Inquiry into their Nature and Causes." *Ind Corp Change* 6:379-460.
21. Christensen, Clayton M., Fernando F. Suárez, and James M. Utterback. 1998. "Strategies for Survival in Fast-Changing Industries." *Management Science* 44:S207-S220.

1.3 Patterns of Technological Change

22. Kuhn, Thomas S. 1970. *The Structure of Scientific Revolutions (Foundations of the Unity of Science, Vol. 2, No. 2)*. 2nd ed. University of Chicago Press.(p10-42; 52-91; 111-135)
23. Nelson, Richard R., and Sidney G. Winter. 1977. "In search of useful theory of innovation." *Research Policy* 6:36-76.
24. Dosi, Giovanni. 1982. "Technological paradigms and technological trajectories : A suggested interpretation of the determinants and directions of technical change." *Research Policy* 11:147-162.
25. Clark, Kim B. 1985. "The interaction of design hierarchies and market concepts in technological evolution." *Research Policy* 14:235-251.
26. Tushman, Michael L., and Philip Anderson. 1986. "Technological Discontinuities and Organizational Environments." *Administrative Science Quarterly* 31:439-465.
27. Henderson, Rebecca. 1995. "Of life cycles real and imaginary: The unexpectedly long old age of optical lithography." *Research Policy* 24:631-643.

1.4 Innovation and Learning

28. Abernathy, William J., and Kenneth Wayne. 1974. "Limits of the learning curve.." *Harvard Business Review* 52:109.
29. Levitt, Barbara, and James G. March. 1988. "Organizational Learning." *Annual Review of Sociology* 14:319-338.
30. Cohen, Wesley M., and Daniel A. Levinthal. 1990. "Absorptive Capacity: A New Perspective on Learning and Innovation." *Administrative Science Quarterly* 35:128-152.
31. March, James G. 1991. "Exploration and Exploitation in Organizational Learning." *Organization Science* 2:71-87.
32. Thomke, Stefan, Eric von Hippel, and Roland Franke. 1998. "Modes of experimentation: an innovation process--and competitive--variable." *Research Policy* 27:315-332.
33. Sørensen, Jesper B., and Toby E. Stuart. 2000. "Aging, Obsolescence, and Organizational Innovation." *Administrative Science Quarterly* 45:81-112.

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

34. Abernathy, William J., and Kim B. Clark. 1985. "Innovation: Mapping the winds of creative destruction." *Research Policy* 14:3-22.
35. Henderson, Rebecca M., and Kim B. Clark. 1990. "Architectural Innovation: The Reconfiguration of Existing Product Technologies and the Failure of Established Firms." *Administrative Science Quarterly* 35:9-30.
36. Henderson, Rebecca. 1993. "Underinvestment and Incompetence as Responses to Radical Innovation: Evidence from the Photolithographic Alignment Equipment Industry." *The RAND Journal of Economics* 24:248-270.

37. Christensen, Clayton M., and Joseph L. Bower. 1996. “Customer Power, Strategic Investment, and the Failure of Leading Firms.” *Strategic Management Journal* 17:197-218.
38. Tripsas, Mary. 1997. “Unraveling the Process of Creative Destruction: Complementary Assets and Incumbent Survival in the Typesetter Industry.” *Strategic Management Journal* 18:119-142.
39. Tripsas, Mary. 2009. “Technology, Identity, and Inertia Through the Lens of "The Digital Photography Company".” *Organization Science* 20:441-460.

1.2 Innovation and Competition

40. Rothwell, R. et al. 1974. “SAPPHO updated - project SAPPHO phase II.” *Research Policy* 3:258-291.
41. Wernerfelt, Birger. 1984. “A resource-based view of the firm.” *Strategic Management Journal* 5:171-180.
42. Teece, David J. 1986. “Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy.” *Research Policy* 15:285-305.
43. Henderson, Rebecca, and Iain Cockburn. 1996. “Scale, Scope, and Spillovers: The Determinants of Research Productivity in Drug Discovery.” *The RAND Journal of Economics* 27:32-59.
44. Teece, David J., Gary Pisano, and Amy Shuen. 1997. “Dynamic Capabilities and Strategic Management.” *Strategic Management Journal* 18:509-533.
45. Gawer, Annabelle, and Michael A. Cusumano. 2002. *Platform Leadership: How Intel, Microsoft, and Cisco Drive Industry Innovation*. Harvard Business Press.

1.7 Product Development

46. Clark, Kim B., and Takahiro Fujimoto. 1991. *Product Development Performance: Strategy, Organization, and Management in the World Auto Industry*. Harvard Business Press.(Chapters 7-9)
47. Leonard-Barton, Dororthy. 1992. “Core Capabilities and Core Rigidities: A Paradox in Managing New Product Development.” *Strategic Management Journal* 13:111-125.
48. Cusumano, Michael A., and Kentaro Nobeoka. 1992. “Strategy, structure and performance in product development: Observations from the auto industry.” *Research Policy* 21:265-293.
49. Wheelwright, Steven C. 1992. *Revolutionizing Product Development: Quantum Leaps in Speed, Efficiency, and Quality*. Free Press.(Chapters 9-11)
50. Ulrich, Karl T., and Steven D. Eppinger. 1994. *Product Design and Development*. New York NY: McGraw-Hill.
51. Eisenhardt, Kathleen M., and Behnam N. Tabrizi. 1995. “Accelerating Adaptive Processes: Product Innovation in the Global Computer Industry.” *Administrative Science Quarterly* 40:84-110.
52. Brown, Shona L., and Kathleen M. Eisenhardt. 1995. “Product Development: Past Research, Present Findings, and Future Directions.” *The Academy of Management Review* 20:343-378.
53. Iansiti, Marco. 1995. “Technology integration: Managing technological evolution in a complex environment.” *Research Policy* 24:521-542.
54. Sanderson, Susan, and Mustafa Uzumeri. 1995. “Managing product families: The case of the Sony Walkman.” *Research Policy* 24:761-782.
55. MacCormack, Alan, Roberto Verganti, and Marco Iansiti. 2001. “Developing Products on "Internet Time": The Anatomy of a Flexible Development Process.” *Management Science* 47:133-150.
56. MacCormack, Alan, John Rusnak, and Carliss Y Baldwin. 2006. “Exploring the Structure of

Complex Software Designs: An Empirical Study of Open Source and Proprietary Code." *Management Science* 52:1015-1030.

1.8 Human Side of Technological Innovation

57. Allen, Thomas J. 1984. *Managing the Flow of Technology: Technology Transfer and the Dissemination of Technological Information Within the R&D Organization*. The MIT Press.
58. Allen, Thomas J., and Gunter Henn. 2006. *The Organization and Architecture of Innovation: Managing the Flow of Technology*. Butterworth-Heinemann.

1.9 Innovation in Services

59. Barras, Richard. 1986. "Towards a theory of innovation in services." *Research Policy* 15:161-173.
60. Quinn, James Brian. 1992. *Intelligent Enterprise: A Knowledge and Service Based Paradigm for Industry*. Free Press.(Chapters 1, 7, 8)
61. Cusumano MA, Kahl S, Suarez F. Forthcoming. "A Theory of Services in Product Industries."
62. von Hippel, Eric A., and Pedro Oliveira. 2009. *Users as Service Innovators: The Case of Banking Services*. MIT Sloan School of Management http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1460751 (Accessed October 20, 2009).

1.10 Science and Innovation

63. Arrow, Kenneth. 1962. "Economic Welfare and the Allocation of Resources for Invention." in *The Rate and Direction of Inventive Activity*, edited by Richard R Nelson. Princeton University Press.
64. Ben-David, Joseph, and Teresa A. Sullivan. 1975. "Sociology of Science." *Annual Review of Sociology* 1:203-222.
65. Rosenberg, Nathan. 1990. "Why do firms do basic research (with their own money)?." *Research Policy* 19:165-174.
66. Brooks, Harvey. 1994. "The relationship between science and technology." *Research Policy* 23:477-486.
67. Dasgupta, Partha, and Paul A. David. 1994. "Toward a new economics of science." *Research Policy* 23:487-521.
68. Furman, Jeffrey L., and Scott Stern. 2006. *Climbing Atop the Shoulders of Giants: The Impact of Institutions on Cumulative Research*.
69. Murray, Fiona. 2007. "The Stem-Cell Market -- Patents and the Pursuit of Scientific Progress." *New England Journal of Medicine* 356:2341-2343.

1.11 Intellectual Property

70. Schmookler, Jacob. 1966. *Invention and Economic Growth*. Harvard University Press.
71. Griliches, Zvi. 1990. "Patent Statistics as Economic Indicators: A Survey." *Journal of Economic Literature* 28:1661-1707.
72. Jaffe, Adam B., Manuel Trajtenberg, and Rebecca Henderson. 1993. "Geographic Localization of Knowledge Spillovers as Evidenced by Patent Citations." *The Quarterly Journal of Economics* 108:577-598.
73. Heller, Michael A., and Rebecca S. Eisenberg. 1998. "Can Patents Deter Innovation? The Anticommons in Biomedical Research." *Science* 280:698-701.
74. Lessig, Lawrence. 1999. *Code and Other Laws of Cyberspace*. San Val. (Chapter 7 and 10)
75. Hesse, Carla. 2002. "The rise of intellectual property, 700 B.C.-A.D. 2000: An idea in the balance." *Daedalus* 131:26.

76. Walsh, John P., Charlene Cho, and Wesley M. Cohen. 2005. "View from the Bench: Patents and Material Transfers." *Science* 309:2002-2003.
77. Moser, Petra. 2005. "How Do Patent Laws Influence Innovation? Evidence from Nineteenth-Century World's Fairs." *The American Economic Review* 95:1214-1236.
78. Murray, Fiona, and Scott Stern. 2007. "Do formal intellectual property rights hinder the free flow of scientific knowledge?: An empirical test of the anti-commons hypothesis." *Journal of Economic Behavior & Organization* 63:648-687.
79. Fauchart, Emmanuelle, and Eric von Hippel. 2008. "Norms-Based Intellectual Property Systems: The Case of French Chefs.." *Organization Science* 19:187-201.
80. Murray, Fiona, Philippe Aghion, Mathias Dewatripont, Julian Kolev, and Scott Stern. 2009. *Of Mice and Academics: Examining the Effect of Openness on Innovation*. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1369055 (Accessed March 29, 2010).
81. Murray, Fiona. 2008. "The Oncomouse that roared: Resistance and accommodation to patenting in Academic Science." *Amercian Journal of Sociology*.

1.12 Technology Transfer

82. Stokes, Donald E. 1997. *Pasteurs Quadrant: Basic Science and Technological Innovation*. Brookings Institution Press.
83. Mansfield, Edwin. 1998. "Academic research and industrial innovation: An update of empirical findings." *Research Policy* 26:773-776.
84. Evans, J. A. 2006. "Industry collaboration and theory in academic science.".
85. Azoulay, Pierre, Waverly Ding, and Toby Stuart. 2006. *The Impact of Academic Patenting on the Rate, Quality, and Direction of (Public) Research Output*. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=875676 (Accessed March 29, 2010).

1.13 Networks and Geography of Innovation

86. Audretsch, David B., and Maryann P. Feldman. 1996. "R&D Spillovers and the Geography of Innovation and Production." *The American Economic Review* 86:630-640.
87. Almeida, Paul, and Bruce Kogut. 1999. "Localization of Knowledge and the Mobility of Engineers in Regional Networks." *Management Science* 45:905-917.
88. Powell, Walter W., Douglas R. White, Kenneth W. Koput, and Jason Owen-Smith. 2005. "Network Dynamics and Field Evolution: The Growth of Interorganizational Collaboration in the Life Sciences." *American Journal of Sociology* 110:1132-1205.
89. Thompson, Peter, and Melanie Fox-Kean. 2005. "Patent Citations and the Geography of Knowledge Spillovers: A Reassessment." *The American Economic Review* 95:450-460.

1.14 Economic Perspectives

90. Hayek, F. A. 1945. "The Use of Knowledge in Society." *The American Economic Review* 35:519-530.
91. Griliches, Zvi. 1957. "Hybrid Corn: An Exploration in the Economics of Technological Change." *Econometrica* 25:501-522.
92. David, Paul A. 1985. "Clio and the Economics of QWERTY." *The American Economic Review* 75:332-337.
93. Nelson, Richard R., and Sidney G. Winter. 1985. *An Evolutionary Theory of Economic Change*. Belknap Press of Harvard University Press. (Chapters 4 and 5)

1.15 Sociological Perspectives

94. Winner, Langdon. 1993. "Upon Opening the Black Box and Finding It Empty: Social

Constructivism and the Philosophy of Technology." *Science, Technology & Human Values* 18:362-378.
95. Vincenti, Walter G. 1994. "The Retractable Airplane Landing Gear and the Northrop "Anomaly": Variation-Selection and the Shaping of Technology." *Technology and Culture* 35:1-33.
96. Garud, Raghu, and Michael A. Rappa. 1994. "A Socio-Cognitive Model of Technology Evolution: The Case of Cochlear Implants." *Organization Science* 5:344-362.
97. Bothner, Matthew S. 2003. "Competition and Social Influence: The Diffusion of the Sixth-Generation Processor in the Global Computer Industry." *American Journal of Sociology* 108:1175-1210.

Entrepreneurship

2.1 Overviews

98. Stevenson, Howard H., and J. Carlos Jarillo. 1990. "A Paradigm of Entrepreneurship: Entrepreneurial Management." *Strategic Management Journal* 11:17-27.
99. Baumol, William J. 1990. "Entrepreneurship: Productive, Unproductive, and Destructive." *Journal of Political Economy* 98:893.
100. Thornton, Patricia H. 1999. "The Sociology of Entrepreneurship." *Annual Review of Sociology* 25:19-46.

2.2 Classics

101. Roberts, Edward B. 1991. *Entrepreneurs in High Technology: Lessons from MIT and Beyond*. Oxford University Press, USA. (SKIM)
102. Kirzner, Israel M. 1997. "Entrepreneurial Discovery and the Competitive Market Process: An Austrian Approach." *Journal of Economic Literature* 35:60-85.

2.3 Source of Entrepreneurship: Origins

103. Romanelli, Elaine. 1991. "The Evolution of New Organizational Forms." *Annual Review of Sociology* 17:79-103.
104. Shane, Scott. 2000. "Prior Knowledge and the Discovery of Entrepreneurial Opportunities." *Organization Science* 11:448-469.
105. Ruef, Martin. 2005. "Origins of organizations: the entrepreneurial process." *Research in the Sociology of Work* 15:63–100.
106. Gompers, Paul, Josh Lerner, and David Scharfstein. 2005. "Entrepreneurial Spawning: Public Corporations and the Genesis of New Ventures, 1986 to 1999." *The Journal of Finance* 60:577-614.
107. Aldrich, Howard, and Martin Ruef. 2006. *Organizations Evolving*. 2nd ed. Sage Publications Ltd. (Chapter 2-4)

2.4 Sources of Entrepreneurship: Spin-offs and Careers

108. Shane, Scott. 2001. "Technological Opportunities and New Firm Creation." *Management Science* 47:205-220.
109. Klepper, Steven. 2001. "Employee Startups in High-Tech Industries." *Ind Corp Change* 10:639-674.
110. Stuart, Toby E., and Olav Sorenson. 2003. "Liquidity Events and the Geographic Distribution of Entrepreneurial Activity." *Administrative Science Quarterly* 48:175-201.

2.5 Entrepreneurial Strategies

111. Eisenhardt, Kathleen M., and Claudia Bird Schoonhoven. 1990. “Organizational Growth: Linking Founding Team, Strategy, Environment, and Growth Among U.S. Semiconductor Ventures, 1978-1988.” *Administrative Science Quarterly* 35:504-529.
112. Gans, Joshua S., and Scott Stern. 2003. “The product market and the market for "ideas": commercialization strategies for technology entrepreneurs.” *Research Policy* 32:333-350.

2.6 Institutional Approaches to Entrepreneurship

113. Aldrich, Howard E., and C. Marlene Fiol. 1994. “Fools Rush in? The Institutional Context of Industry Creation.” *The Academy of Management Review* 19:645-670.
114. Stuart, Toby E., Ha Hoang, and Ralph C. Hybels. 1999. “Interorganizational Endorsements and the Performance of Entrepreneurial Ventures.” *Administrative Science Quarterly* 44:315-349.
115. Hargadon, Andrew B., and Yellowlees Douglas. 2001. “When Innovations Meet Institutions: Edison and the Design of the Electric Light.” *Administrative Science Quarterly* 46:476-501.
116. Burton, M. Diane, Jesper B. Sørensen, and Christine M. Beckman. 2002. “Coming from good stock: Career histories and new venture formation.” Pp. 229-262 in *Research in the sociology of organization*, vol. 19, edited by M. Lounsbury and M. J. Ventresca. Oxford: Elsevier (JAI Press).
117. Hsu, David H. 2004. “What Do Entrepreneurs Pay for Venture Capital Affiliation?.” *The Journal of Finance* 59:1805-1844.
118. Stuart, Toby E., and Waverly W. Ding. 2006. “When Do Scientists Become Entrepreneurs? The Social Structural Antecedents of Commercial Activity in the Academic Life Sciences.” *American Journal of Sociology* 112:97-144.
119. Santos, Filipe M., and Kathleen M. Eisenhardt. 2009. “Constructing Markets and Shaping Boundaries: Entrepreneurial Power in Nascent Fields.” *Academy of Management Journal* 52:643-671.

2.7 Networks and Entrepreneurship

120. Sorenson, Olav, and Toby E. Stuart. 2001. “Syndication Networks and the Spatial Distribution of Venture Capital Investments.” *American Journal of Sociology* 106:1546-1588.
121. Podolny, Joel M. 2001. “Networks as the Pipes and Prisms of the Market.” *American Journal of Sociology* 107:33-60.
122. Ruef, Martin, Howard E. Aldrich, and Nancy M. Carter. 2003. “The Structure of Founding Teams: Homophily, Strong Ties, and Isolation among U.S. Entrepreneurs.” *American Sociological Review* 68:195-222.

2.8 Entrepreneurial Capabilities

123. Baron, James N., Michael T. Hannan, and M. Diane Burton. 1999. “Building the Iron Cage: Determinants of Managerial Intensity in the Early Years of Organizations.” *American Sociological Review* 64:527-547.
124. Damon J. Phillips. 2002. “A Genealogical Approach to Organizational Life Chances: The Parent-Progeny Transfer among Silicon Valley Law Firms, 1946-1996.” *Administrative Science Quarterly* 47:474-506.

2.9 Ecology of Entrepreneurship

125. Haveman, Heather A., and Lisa E. Cohen. 1994. “The Ecological Dynamics of Careers: The Impact of Organizational Founding, Dissolution, and Merger on Job Mobility.” *The American*

Journal of Sociology 100:104-152.
126. Carroll, Glenn R., Lyda S. Bigelow, MARC-David L. Seidel, and Lucia B. Tsai. 1996. "The fates of De Novo and De Alio producers in the American Automobile Industry 1885-1981." *Strategic Management Journal* 17:117-137.
127. Sorenson, Olav, and Pino G. Audia. 2000. "The Social Structure of Entrepreneurial Activity: Geographic Concentration of Footwear Production in the United States, 1940-1989." *The American Journal of Sociology* 106:424-461.
128. Carroll, Glenn R., and Olga M. Khessina. 2005. "The Ecology of Entrepreneurship." Pp. 167-200 in *Handbook of Entrepreneurship Research*. http://dx.doi.org/10.1007/0-387-23622-8_9 (Accessed March 29, 2010).

Strategic Management

3.1 Overviews and Classics

129. Chandler, Alfred D. 1969. *Strategy and Structure: Chapters in the History of the American Industrial Enterprise*. The MIT Press. (Chapters 1-3)
130. Porter, Michael. 1980. *Competitive strategy : techniques for analyzing industries and competitors*. New York, New York: Free Press. (Chapters 1-2)
131. Barney, Jay B. 1986. "Strategic Factor Markets: Expectations, Luck, and Business Strategy." *Management Science* 32:1231-1241.
132. Yao, Dennis A. 1988. "Beyond the Reach of the Invisible Hand: Impediments to Economic Activity, Market Failures, and Profitability." *Strategic Management Journal* 9:59-70.
133. Porter, Michael E. 1996. "What Is Strategy?." *Harvard Business Review* 74:61-78.
134. McGahan, Anita M., and Michael E. Porter. 1997. "How Much Does Industry Matter, Really?." *Strategic Management Journal* 18:15-30.

3.2 Resources and Dynamic Capabilities

135. Wernerfelt, Birger. 1984. "A resource-based view of the firm." *Strategic Management Journal* 5:171-180.
136. Peteraf, Margaret A. 1993. "The Cornerstones of Competitive Advantage: A Resource-Based View." *Strategic Management Journal* 14:179-191.
137. Henderson, Rebecca, and Iain Cockburn. 1994. "Measuring Competence? Exploring Firm Effects in Pharmaceutical Research." *Strategic Management Journal* 15:63-84.
138. Burgelman, Robert A. 1994. "Fading Memories: A Process Theory of Strategic Business Exit in Dynamic Environments." *Administrative Science Quarterly* 39:24-56.
139. Teece, David J., Gary Pisano, and Amy Shuen. 1997. "Dynamic Capabilities and Strategic Management." *Strategic Management Journal* 18:509-533.
140. Eisenhardt, Kathleen M., and Jeffrey A. Martin. 2000. "Dynamic capabilities: what are they?." *Strategic Management Journal* 21:1105-1121.

3.3 Decision Making and Routines

141. Eisenhardt, Kathleen M. 1989. "Making Fast Strategic Decisions in High-Velocity Environments." *The Academy of Management Journal* 32:543-576.
142. Eisenhardt, Kathleen M., and Mark J. Zbaracki. 1992. "Strategic Decision Making." *Strategic Management Journal* 13:17-37.
143. Weick, Karl E. 1993. "The Collapse of Sensemaking in Organizations: The Mann Gulch Disaster." *Administrative Science Quarterly* 38:628-652.
144. Gavetti, Giovanni, and Daniel Levinthal. 2000. "Looking Forward and Looking Backward:

Cognitive and Experiential Search." *Administrative Science Quarterly* 45:113-137.
145. Gilbert, Clark. 2005. "Unbundling the structure of inertia: resource versus routine rigidity." *Academy of Management Journal* 48:741-763.
146. Davis, Jason P., Kathleen M. Eisenhardt, and Christopher B. Bingham. 2009. "Optimal structure, market dynamism, and the strategy of simple rules." *Administrative Science Quarterly*.
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

148. Mowery, David, and Nathan Rosenberg. 1979. "The influence of market demand upon innovation: a critical review of some recent empirical studies." *Research Policy* 8:102-153.
149. Benkler, Yochai. 2002. "Coase's Penguin, or, Linux and The Nature of the Firm." *Yale Law Journal* 112:369.
150. Chesbrough, Henry William. 2003. *Open Innovation: The New Imperative for Creating and Profiting from Technology*. Harvard Business Press.
(SKIM)
151. von Hippel, Eric. 2005. *Democratizing Innovation*. Cambridge, Massachusetts: The MIT Press.
152. Murray, Fiona, and Siobhan O'Mahony. 2007. "Exploring the Foundations of Cumulative Innovation: Implications for Organization Science." *Organization Science* 18:1006-1021.

4.2 Free/Libre and Open Source Software

153. Raymond, Eric S. 1999. *The Cathedral and the Bazaar: Musings on Linux and Open Source by an Accidental Revolutionary*. edited by Tim O'Reilly. Sebastopol, CA: O'Reilly and Associates.
154. DiBona, Chris, Sam Ockman, and Mark Stone, eds. 1999. *Open Sources: Voices from the Open Source Revolution*. 1st ed. O'Reilly Media.
155. Mockus, Audris, Roy T. Fielding, and James D. Herbsleb. 2002. "Two case studies of open source software development: Apache and Mozilla." *ACM Transactions on Software Engineering Methodology* 11:309-346.Williams, Sam. 2002. *Free As in Freedom: Richard Stallman's Crusade for Free Software*. 1st ed. O'Reilly Media, Inc.
156. Stallman, Richard M. 2002. *Free Software, Free Society: Selected Essays of Richard M. Stallman*. edited by Joshua Gay. Free Software Foundation.
157. Healy, Kieran, and Alan Schussman. 2003. "The Ecology of Open-Source Software Development.".
158. von Hippel, Eric, and Georg von Krogh. 2003. "Open Source Software and the 'Private-Collective' Innovation Model: Issues for Organization Science." *Organization Science* 14:209-223.
159. von Krogh, Georg, and Eric von Hippel. 2006. "The Promise of Research on Open Source Software." *Management Science* 52:975-983.
160. Crowston, Kevin, Kangning Wei, James Howison, and Andrea Wiggins. 2009. "Free/Libre Open Source Software: What We Know and What We Do Not Know." http://flosshub.org/content/freelibre-open-source-software-what-we-know-and-what-we-do-not-know (Accessed November 19, 2009).

4.3 Motivation

161. Hars, A., and S. Ou. 2002. “Working for free? Motivations for participating in open-source projects.” *International Journal of Electronic Commerce* 6:25–39.
162. Lerner, Josh, and Jean Tirole. 2002. “Some Simple Economics of Open Source.” *Journal of Industrial Economics* 50:197-234.
163. Lakhani, Karim R., and Eric von Hippel. 2003. “How open source software works: "Free" user-to-user assistance.” *Research Policy* 32:923-943.
164. Bonaccorsi, Andrea, and Cristina Rossi. 2003. “Why Open Source Software can Succeed.” *Research Policy* 32:1243-1258.
165. von Krogh, Georg, Sebastian Spaeth, and Karim R. Lakhani. 2003. “Community, joining, and specialization in open source software innovation: a case study.” *Research Policy* 32:1217-1241.
166. Lakhani, Karim, and B. Wolf. 2005. “Why Hackers Do What They Do: Understanding Motivation and Effort in Free/Open Source Software Projects.” Pp. 3-22 in *Perspectives on Free and Open Source Software*, edited by Joseph Feller, Brian Fitzgerald, Scott A. Hissam, and Karim R. Lakhani. MIT Press.
167. Lerner, Josh, Parag A. Pathak, and Jean Tirole. 2006. “The Dynamics of Open-Source Contributors.” *The American Economic Review* 96:114-118.
168. Roberts, Jeffrey A., Il-Horn Hann, and Sandra A. Slaughter. 2006. “Understanding the Motivations, Participation, and Performance of Open Source Software Developers: A Longitudinal Study of the Apache Projects.” *Management Science* 52:984-999.

4.4 Open Source and Organizations

169. West, Joel. 2003. “How open is open enough?: Melding proprietary and open source platform strategies.” *Research Policy* 32:1259-1285.
170. Shah, Sonali K. 2006. “Motivation, Governance, and the Viability of Hybrid Forms in Open Source Software Development.” *Management Science* 52:1000-1014.
171. Shah, Sonali K., and Mary Tripsas. 2007. “The accidental entrepreneur: the emergent and collective process of user entrepreneurship.” *Strategic Entrepreneurship Journal* 1:123-140.
172. O'Mahony, Siobhan, and Beth A. Bechky. 2008. “Boundary Organizations: Enabling Collaboration among Unexpected Allies.” *Administrative Science Quarterly* 53:422-459.

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.

Examiner's Signature _____

Organizational and Economic Sociology Reading List

Organizations

5.1 Overviews and Classics

173. March, James G., and Herbert A. Simon. 1958. *Organizations*. New York, NY: Wiley. (Chapters 1 and 6)
174. Stinchcombe, Arthur L. 1959. "Bureaucratic and Craft Administration of Production: A Comparative Study." *Administrative Science Quarterly* 4:168-187.
175. Cyert, Richard, and James March. 1963. *Behavioral Theory of the Firm*. Engelwood Cliffs, New Jersey: Prentice-Hall. (Chapters 3 and 6)
176. March, James G., and Arthur L. Stinchcombe. 1965. "Social Structure and Organizations." Pp. 142-193 in *Handbook of Organizations*. Rand McNally & C0.
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

178. Crozier, Michael. 1964. *The Bureaucratic Phenomenon*. Chicago, Illinois: Univ of Chicago Press. (Chapters 5,6)
179. Thompson, James D. 1967. *Organizations in action: Social science bases of administrative theory*. 1st ed. New York, New York: McGraw-Hill. (Chapter 4)
180. Pfeffer, Jeffrey, and Gerald Salancik. 1978. *The External Control of Organizations: A Resource Dependence Perspective*. 1st ed. New York: Harper & Row.(Chapters 3-7)

5.3 Institutional Approaches

181. Selznick, Philip. 1984. *Leadership in Administration: A Sociological Interpretation*. University of California Press. (Introduction and Chapter 2)
182. Meyer, John W., and Brian Rowan. 1977. "Institutionalized Organizations: Formal Structure as Myth and Ceremony." *The American Journal of Sociology* 83:340-363.
183. Tolbert, Pamela S., and Lynne G. Zucker. 1983. "Institutional Sources of Change in the Formal Structure of Organizations: The Diffusion of Civil Service Reform, 1880-1935." *Administrative Science Quarterly* 28:22-39.
184. DiMaggio, Paul J., and Walter W. Powell. 1983. "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields." *American Sociological Review* 48:147-160.

5.4 Ecological Approaches

185. Hannan, Michael T., and John Freeman. 1977. "The Population Ecology of Organizations." *The American Journal of Sociology* 82:929-964.
186. Freeman, John, and Michael T. Hannan. 1983. "Niche Width and the Dynamics of Organizational Populations." *The American Journal of Sociology* 88:1116-1145.
187. Hannan, Michael T., and John Freeman. 1984. "Structural Inertia and Organizational Change." *American Sociological Review* 49:149-164.
188. Carroll, Glenn R., and Michael T. Hannan. 1989. "Density Dependence in the Evolution of Populations of Newspaper Organizations." *American Sociological Review* 54:524-541.

189. Ruef, Martin. 2000. “The Emergence of Organizational Forms: A Community Ecology Approach.” *American Journal of Sociology* 106:658-714.

5.5 Transaction Cost Economics

190. Coase, Ronald H. 1937. “The Nature of the Firm.” *Economica* 4:386-405.
191. Williamson, Oliver E. 1981. “The Economics of Organization: The Transaction Cost Approach.” *The American Journal of Sociology* 87:548-577.

5.6 Social Movements and New Forms

192. McCarthy, John D., and Mayer N. Zald. 1977. “Resource Mobilization and Social Movements: A Partial Theory.” *The American Journal of Sociology* 82:1212-1241.
193. McAdam, Doug. 1986. “Recruitment to High-Risk Activism: The Case of Freedom Summer.” *The American Journal of Sociology* 92:64-90.
194. Rao, Hayagreeva. 1998. “Caveat Emptor: The Construction of Nonprofit Consumer Watchdog Organizations.” *American Journal of Sociology* 103:912-961.
195. Benford, Robert D., and David A. Snow. 2000. “Framing Processes and Social Movements: An Overview and Assessment.” *Annual Review of Sociology* 26:611-639.
196. Ingram, Paul, and Hayagreeva Rao. 2004. “Store Wars: The Enactment and Repeal of Anti-Chain-Store Legislation in America.” *The American Journal of Sociology* 110:446-487.

Economic Sociology

6.1 Overviews

197. Granovetter, Mark. 1985. “Economic Action and Social Structure: The Problem of Embeddedness.” *The American Journal of Sociology* 91:481-510.
198. Dobbin, Frank. 2004. “The sociological view of the economy.” Pp. 1–46 in *The New Economic Sociology: A Reader*.
199. Zuckerman, Ezra W. 2004. “Towards the Social Reconstruction of an Interdisciplinary Turf War.” *American Sociological Review* 69:458-465.
200. Smelser, Neil J., and Richard Swedberg. 2005. “Introducing economic sociology.” in *The Handbook of Economic Sociology*. Princeton, N.J.: Princeton University Press and Russell Sage Foundation.
201. Fligstein, Neil, and Luke Dauter. 2007. “The Sociology of Markets.” *Annual Review of Sociology* 33:105-128.

6.2 Sociology Classics

202. Marx, Karl. 1978. “The German Ideology.” in *The Marx-Engels Reader*. W. W. Norton & Company. (Pp. 149-155, 172-173, 176-188)
203. Durkheim, Emile. 1960. *The division of labor in society*. Free Press. (Pp. 39-41, 104-113, 129-131, 193-195, 226-227, 287-291, 277-280)
204. Weber, Max. 1930. *The Protestant Ethic and the Spirit of Capitalism*. New York, NY: Routledge. (Pp. 3-11;39-41;102-109;115-116;124-125)
205. Weber, Max. 2001. “Status Groups and Classes.” Pp. 142-145 in *Social Stratification*, edited by David B. Grusky.
206. Weber, Max. 2001. “Class, Status, Party.” Pp. 132-141 in *Social Stratification*, edited by David B. Grusky.

6.3 Status

207. Gusfield, Joseph R. 1986. *Symbolic Crusade: Status Politics and the American Temperance Movement*. 2nd ed. University of Illinois Press. (Introduction and Chapter 1)
208. Heinz, John, and Edward Laumann. 1994. *Chicago Lawyers, Revised Edition: The Social Structure of the Bar*. Rev Sub. Northwestern University Press. (Chapter 4)
209. Gould, Roger V. 2002. "The Origins of Status Hierarchies: A Formal Theory and Empirical Test." *The American Journal of Sociology* 107:1143-1178.
210. Podolny, Joel M. 2005. *Status Signals: A Sociological Study of Market Competition*. Princeton University Press. (Chapter 1-5)
211. Ridgeway, Cecilia L., and Shelley Joyce. Correll. 2006. "Consensus and the Creation of Status Beliefs." *Social Forces* 85:431-453.

6.4 Networks, Social Capital and Brokerage

212. Simmel, George. 1964. "The Triad." in *The Sociology of Georg Simmel*, edited by Kurt H. Wolff. Free Press.
213. Granovetter, Mark S. 1973. "The Strength of Weak Ties." *The American Journal of Sociology* 78:1360-1380.
214. Coleman, James S. 1988. "Social Capital in the Creation of Human Capital." *The American Journal of Sociology* 94:S95-S120.
215. Burt, Ronald. 1992. *Structural Holes: The Social Structure of Competition*. Cambrdige, Massachusetts: Harvard University Press. (Chapters 1 and 2)
216. Uzzi, Brian. 1997. "Social Structure and Competition in Interfirm Networks: The Paradox of Embeddedness." *Administrative Science Quarterly* 42:35-67.
217. Podolny, Joel M., and Karen L. Page. 1998. "Network Forms of Organization." *Annual Review of Sociology* 24:57-76.
218. Hansen, Morten T. 1999. "The Search-Transfer Problem: The Role of Weak Ties in Sharing Knowledge across Organization Subunits." *Administrative Science Quarterly* 44:82-111.
219. Ingram, Paul, and Peter W. Roberts. 2000. "Friendships among Competitors in the Sydney Hotel Industry." *The American Journal of Sociology* 106:387-423.
220. Obstfeld, David. 2005. "Social Networks, the Tertius Iungens Orientation, and Involvement in Innovation." *Administrative Science Quarterly* 50:100-130.

6.5 Role and Category Pressures

221. Douglas, Mary. 1966. *Purity and Danger: An Analysis of the Concepts of Pollution and Taboo*. 1st ed. New York: Praeger. (Introduction and Chapter 1)
222. Padgett, John F., and Christopher K. Ansell. 1993. "Robust Action and the Rise of the Medici, 1400-1434." *The American Journal of Sociology* 98:1259-1319.
223. Westphal, James D., Ranjay Gulati, and Stephen M. Shortell. 1997. "Customization or Conformity? An Institutional and Network Perspective on the Content and Consequences of TQM Adoption." *Administrative Science Quarterly* 42:366-394.
224. Zbaracki, Mark J. 1998. "The Rhetoric and Reality of Total Quality Management." *Administrative Science Quarterly* 43:602-636.
225. Zuckerman, Ezra W. 1999. "The Categorical Imperative: Securities Analysts and the Illegitimacy Discount." *The American Journal of Sociology* 104:1398-1438.
226. Carroll, Glenn R., and Anand Swaminathan. 2000. "Why the Microbrewery Movement? Organizational Dynamics of Resource Partitioning in the U.S. Brewing Industry." *The American Journal of Sociology* 106:715-762.

227. Strang, David, and Michael W. Macy. 2001. “In Search of Excellence: Fads, Success Stories, and Adaptive Emulation.” *The American Journal of Sociology* 107:147-182.
228. Zuckerman, Ezra W., Tai-Young Kim, Kalinda Ukanwa, and James von Rittmann. 2003. “Robust Identities or Nonentities? Typecasting in the Feature-Film Labor Market.” *The American Journal of Sociology* 108:1018-1074.

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 suggests 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.

Examiner's Signature _____

Technology Design Reading List

Design for Cooperative Work

7.1 Overviews

229. Ellis, Clarence A., Simon J. Gibbs, and Gail Rein. 1991. “Groupware: some issues and experiences.” *Communications of the ACM* 34:39-58.
230. Kling, Rob. 1991. “Cooperation, coordination and control in computer-supported work.” *Commun. ACM* 34:83-88.
231. Orlikowski, Wanda J. 1992. “Learning from Notes: organizational issues in groupware implementation.” Pp. 362-369 in *Proceedings of the 1992 ACM conference on Computer-supported cooperative work*. Toronto, Ontario, Canada: ACM.
232. Grudin, Jonathan. 1994. “Computer-supported cooperative work: history and focus.” *IEEE Computer* 27:19–26.

7.2 Theory

233. Suchman, Lucy A. 1983. “Office procedure as practical action: models of work and system design.” *ACM Trans. Inf. Syst.* 1:320-328.
234. McGrath, Joseph Edward. 1984. “Typology of Tasks.” Pp. 60-66 in *Groups: Interaction and Performance*. Prentice Hall College Div.
235. Malone, Thomas W., and Kevin Crowston. 1990. “What is coordination theory and how can it help design cooperative work systems?.” Pp. 357-370 in *Proceedings of the 1990 ACM conference on Computer-supported cooperative work*. Los Angeles, California, United States: ACM (Accessed March 31, 2010).
236. Hutchins, Edwin. 1990. “The technology of team navigation.” in *Intellectual Teamwork: Social and Technological Foundations of Cooperative Work*, edited by Jolene Galegher, Robert E. Kraut, and Carmen Egido. Psychology Press.
237. Kaptelin, Victor, Kari Kuutti, and Liam Bannon. 1995. “Activity Theory: Basic concepts and applications.” edited by Brad Blumenthal, I͡U. M Gornostaev, and C. Unger. Berlin: Springer.
238. Suchman, Lucy. 1995. “Making work visible.” *Commun. ACM* 38:56-ff.
239. Nardi, Bonnie A., and Kari Kuutti. 1995. “Activity Theory as a potential framework for human-computer interaction research.” in *Context and Consciousness: Activity Theory and Human-Computer Interaction*. The MIT Press.
240. Crowston, Kevin. 1997. “A Coordination Theory Approach to Organizational Process Design.” *Organization Science* 8:157-175.
241. Hollan, James, Edwin Hutchins, and David Kirsh. 2000. “Distributed cognition: toward a new foundation for human-computer interaction research.” *ACM Trans. Comput.-Hum. Interact.* 7:174-196.

7.3 Communication

242. Finholt, Tom, and Lee S. Sproull. 1990. “Electronic Groups at Work.” *Organization Science* 1:41-64.
243. Tatar, D. G., G. Foster, and D. G. Bobrow. 1991. “Design for conversation: lessons from Cognoter.” Pp. 55-80 in *Computer-supported cooperative work and groupware*. Academic Press Ltd.
244. Clark, Herbert H., and Susan E. Brennan. 1992. “Grounding in Communication.” in *Readings*

in Groupware and Computer-Supported Cooperative Work: Assisting Human-Human Collaboration, edited by Ronald M. Baecker. Morgan Kaufmann.
245. Orlikowski, Wanda J., and Debra C. Gash. 1994. "Technological frames: making sense of information technology in organizations." *ACM Trans. Inf. Syst.* 12:174-207.
246. Nardi, Bonnie A., Steve Whittaker, and Erin Bradner. 2000. "Interaction and outeraction: instant messaging in action." Pp. 79-88 in *Proceedings of the 2000 ACM conference on Computer supported cooperative work*. Philadelphia, Pennsylvania, United States: ACM.

7.4 Awareness

247. Dourish, Paul, and Victoria Bellotti. 1992. "Awareness and coordination in shared workspaces." Pp. 107-114 in *CSCW '92: Proceedings of the 1992 ACM conference on Computer-supported cooperative work*. New York, NY, USA: ACM Press.
248. Hill, William C., James D. Hollan, Dave Wroblewski, and Tim McCandless. 1992. "Edit wear and read wear." Pp. 3-9 in *CHI '92: Proceedings of the SIGCHI conference on Human factors in computing systems*. New York, NY, USA: ACM Press.
249. Gutwin, Carl, and Saul Greenberg. 2002. "A Descriptive Framework of Workspace Awareness for Real-Time Groupware." *Computer Supported Cooperative Work (CSCW)* 11:411-446.

7.5 Design Cocerns

250. Winner, Langdon. 1986. "Do Artifacts Have Politics." in *The Whale and the Reactor: A Search for Limits in an Age of High Technology*. University of Chicago Press.
251. Kyng, Morten. 1991. "Designing for cooperation: cooperating in design." *Commun. ACM* 34:65-73.
252. Grudin, Jonathan. 1994. "Groupware and social dynamics: eight challenges for developers." *Commun. ACM* 37:92-105.
253. Winograd, Terry. 1994. "Categories, disciplines, and social coordination." *Computer Supported Cooperative Work (CSCW)* 2:191-197.
254. Straus, Susan G, and Joseph E McGrath. 1994. "Does the medium matter? The interaction of task type and technology on group performance and member reactions." *The Journal of Applied Psychology* 79:87-97.
255. Gutwin, Carl, and Saul Greenberg. 1998. "Design for individuals, design for groups: tradeoffs between power and workspace awareness." Pp. 207-216 in *Proceedings of the 1998 ACM conference on Computer supported cooperative work*. Seattle, Washington, United States: ACM.

Social Computing

8.1 Online Communities

256. Nardi, Bonnie A., Diane J. Schiano, and Michelle Gumbrecht. 2004. "Blogging as social activity, or, would you let 900 million people read your diary?." Pp. 222-231 in *Proceedings of the 2004 ACM conference on Computer supported cooperative work*. Chicago, Illinois, USA: ACM.
257. Bruckman, Amy. 2006. "A new perspective on "community" and its implications for computer-mediated communication systems." Pp. 616-621 in *CHI '06 extended abstracts on Human factors in computing systems*. Montréal, Québec, Canada: ACM.
258. Beer, David, and Roger Burrows. 2007. "Sociology And, of and in Web 2.0: Some Initial Considerations." *Sociological Research Online* 12.
259. Boyd, Danah M., and Nicole B. Ellison. 2007. "Social Network Sites: Definition, History, and

Scholarship..” *Journal of Computer-Mediated Communication* 13:210-230.

8.2 Motivativing Participation

260. Beenen, Gerard et al. 2004. “Using social psychology to motivate contributions to online communities.” Pp. 212-221 in *Proceedings of the 2004 ACM conference on Computer Supported Cooperative Work*. Chicago, Illinois, USA: ACM.
261. Ridings, Catherine M., and David Gefen. 2004. “Virtual Community Attraction: Why People Hang Out Online.” *Journal of Computer-Mediated Communication* 10:00-00.
262. Tedjamulia, S. J. J., D. L. Dean, D. R. Olsen, and C. C. Albrecht. 2005. “Motivating content contributions to online communities: Toward a more comprehensive theory.” Pp. 193b–193b in *System Sciences, 2005. HICSS'05. Proceedings of the 38th Annual Hawaii International Conference on*.

8.3 Large Communities

263. Kollock, Peter, and Marc Smith. 1996. “Managing the virtual commons: Cooperation and conflict in computer communities” edited by Susan Herring. *Computer-Mediated Communication: Linguistic, Social, and Cross-Cultural Perspectives* 109–128.
264. Whittaker, Steve, Loren Terveen, Will Hill, and Lynn Cherny. 1998. “The dynamics of mass interaction.” Pp. 257-264 in *Proceedings of the 1998 ACM conference on Computer supported cooperative work*. Seattle, Washington, United States: ACM.
265. Erickson, Thomas, and Wendy A. Kellogg. 2000. “Social translucence: an approach to designing systems that support social processes.” *ACM Trans. Comput.-Hum. Interact.* 7:59-83.
266. Jensen, Carlos, John Davis, and Shelly Farnham. 2002. “Finding others online: reputation systems for social online spaces.” Pp. 447-454 in *Proceedings of the SIGCHI conference on Human factors in computing systems: Changing our world, changing ourselves*. Minneapolis, Minnesota, USA: ACM.
267. Viegas, Fernanda B., Martin Wattenberg, and Kushal Dave. 2004. “Studying cooperation and conflict between authors with history flow visualizations.” Pp. 575-582 in *CHI '04: Proceedings of the SIGCHI conference on Human factors in computing systems*. New York, NY, USA: ACM Press.

Design for Creativity

9.1 Constructionism and Learning

268. Papert, Seymour. 1980. *Mindstorms : children, computers, and powerful ideas*. New York: Basic Books.
269. Abelson, Harold, and Andrea diSessa. 1981. *Turtle Geometry: The Computer as a Medium for Exploring*. The MIT Press.
270. Lave, Jean, and Etienne Wenger. 1991. *Situated Learning: Legitimate Peripheral Participation*. Cambridge University Press.
271. Scardamalia, Marlene, and Carl Bereiter. 1993. “Computer Support for Knowledge-Building Communities.” *The Journal of the Learning Sciences* 3:265-283.
272. Resnick, Mitchel, Amy Bruckman, and Fred Martin. 1996. “Pianos not stereos: creating computational construction kits.” *interactions* 3:40-50.
273. Bruckman, Amy. 1998. “Community Support for Constructionist Learning.” *Computer Supported Cooperative Work (CSCW)* 7:47-86.
274. Jonassen, David H. 1999. “Designing constructivist learning environments.” Pp. 371–396 in

Instructional design theories and models: A new paradigm of instructional theory.
275. Sawyer, R. Keith. 2006. "Educating for innovation." *Thinking Skills and Creativity* 1:41-48.

9.2 Creativity

276. Mamykina, Lena, Linda Candy, and Ernest Edmonds. 2002. "Collaborative creativity." *Commun. ACM* 45:96-99.
277. Shneiderman, Ben. 2002. "Creativity support tools." *Communications of the ACM* 45:116-120.
278. von Hippel, Eric, and Ralph Katz. 2002. "Shifting Innovation to Users via Toolkits.." *Management Science* 48:821-833.
279. Fischer, Gerhard. 2004. "Social creativity: turning barriers into opportunities for collaborative design." Pp. 152-161 in *Proceedings of the eighth conference on Participatory design: Artful integration: interweaving media, materials and practices - Volume 1*. Toronto, Ontario, Canada: ACM.
280. Shneiderman, Ben et al. 2006. "Creativity support tools: Report from a US National Science Foundation sponsored workshop." *International Journal of Human-Computer StInteractionudies* 20:61–77.

9.2 Examples and Case Studies

281. Greenberg, Saul, and Chester Fitchett. 2001. "Phidgets: easy development of physical interfaces through physical widgets." Pp. 209-218 in *Proceedings of the 14th annual ACM symposium on User interface software and technology*. Orlando, Florida: ACM.
282. Terry, Michael, and Elizabeth D. Mynatt. 2002. "Recognizing creative needs in user interface design." Pp. 38-44 in *Proceedings of the 4th conference on Creativity & cognition*. Loughborough, UK: ACM (Accessed April 28, 2010).
283. Tiwana, Amrit, and Ephraim R. Mclean. 2005. "Expertise Integration and Creativity in Information Systems Development." *J. Manage. Inf. Syst.* 22:13-43.
284. Hartmann, Björn et al. 2006. "Reflective physical prototyping through integrated design, test, and analysis." Pp. 299-308 in *Proceedings of the 19th annual ACM symposium on User interface software and technology*. Montreux, Switzerland: ACM.
285. Buechley, Leah, Mike Eisenberg, Jaime Catchen, and Ali Crockett. 2008. "The LilyPad Arduino: using computational textiles to investigate engagement, aesthetics, and diversity in computer science education." Pp. 423-432 in *Proceeding of the twenty-sixth annual SIGCHI conference on Human factors in computing systems*. Florence, Italy: ACM.
286. Resnick, Mitchel et al. 2009. "Scratch: programming for all." *Communications of the ACM* 52:60.

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.