

**Walter W. Powell**  
**Fall, 2000**

**Education /Sociology 374A**  
**STS 280A**

**WORKSHOP ON THE COMMERCIALIZATION OF KNOWLEDGE**

**COURSE INFORMATION:**

**Class Meetings:**

Thursdays, 1:15 to 3:05 pm.  
509 CERAS Bldg., SCANCOR Conference Room

**Instructors:**

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**Purpose of the Workshop:**

This is a two-quarter (fall and winter) research workshop on the contexts, processes, and outcomes of the commercialization of knowledge. The workshop is intended for students who are either currently studying processes of knowledge transfer or commercialization or have an interest in doing so. Students will play a key role in the workshop in two respects: one, in sharing the task of presenting and discussing the material with the instructor and two, in reporting results of research, either on your own projects or of analysis of data sets provided by the instructor.

Viewed broadly, the commercialization of knowledge involves the transfer of basic science into commercial application. This movement, however, covers an enormous array of processes, actors, and circumstances. Knowledge can be either highly codified or rather tacit. The development can occur through formal channels within an organization, between organizations, or across a market interface or through informal means such as spillovers and knowledge sharing. The carriers of knowledge can be individuals, knowledge communities, social networks, or formal organization. The process of transfer is shaped by both legal regimes and national systems of innovation. Important policy debates and political negotiations shape both how and when knowledge can be commercialized. Indeed, the concepts of intellectual capital and intellectual property are relatively recent constructions.

Our goal in the workshop is twofold: to develop a broad appreciation of the diverse literatures that inform research on knowledge commercialization, and two, empirical analysis of the process in a range of settings. A short list of such topics might include: university patenting, technology transfer policies, the commercialization of university education via the internet, licensing between universities and commercial firms, counter movements such as the open software community, academic entrepreneurialism, the history of centralized corporate R&D labs, and historical studies of knowledge communities.

### **Course Requirements:**

Students will be expected to actively participate in class discussions, take significant responsibility for one of the weekly discussions, and present either their own research or analysis of data provided by the instructor sometime during the fall or winter quarters.

### **Readings:**

My plan is to distribute copies of the readings on a weekly basis. If, however, there are more students than I anticipate, I'll have Field Copy put together a course packet.

### **September 28      INTRODUCTION**

### **October 5            KEY STARTING POINTS**

Partha Dasgupta and Paul David. (1994). "Towards a New Economics of Science." Research Policy. 23 (5): 487-521.

Nelson, Richard R. (1994). "The Co-Evolution of Technology, Industry, and Supporting Institutions." Industrial and Corporate Change. 3(1): 47-63.

Stephan, Paula E. (1996). "The Economics of Science." Journal of Economic Literature. 34: 1199-1235.

Merton, Robert K. (1942/1973). "The Normative Structure of Science." Pp. 267-278 in his The Sociology of Science, University of Chicago Press.

**October 12                    UNIVERSITY – INDUSTRY INTERFACES**

Rosenberg, Nathan and Richard R. Nelson (1994). “American Universities and Technical Advance in Industry.” Research Policy 23: 323-348.

Rosenberg, Nathan. (2000). “America’s University/Industry Interfaces, 1945-2000.” Manuscript, Department of Economics, Stanford.

Powell, Walter W. and Jason Owen-Smith (1998). “Universities and the Market for Intellectual Property in the Life Sciences.” Journal of Policy Analysis and Management. 17(2) 253-277.

Press, Eyal and Jennifer Washburn (2000). “The Kept University.” Atlantic Monthly 285 (3): 39-54.

**October 19                    JASON OWEN-SMITH ON UNIVERSITY PATENTING**

Owen-Smith, Jason. (2000). “Accumulative Advantage in Public and Private Science.” Chapter 2 in Ph.D. dissertation, University of Arizona, Department of Sociology.

Henderson, Rebecca, Adam B. Jaffe, and Manuel Trajtenberg. (1998). “Universities as a Source of Commercial Technology.” Review of Economics and Statistics. 80(1): 119-27.

Myers, Greg. (1995). “From Discovery to Invention: The Writing and Rewriting of Two Patents.” Social Studies of Science. 25: 57-105.

**October 26                    SPILLOVERS, TECHNICAL COMMUNITIES AND OTHER KNOWLEDGE NETWORKS**

Henderson, Rebecca and Iain Cockburn. (1996). “Scale, Scope and Spillovers” The determinants of research productivity in drug discovery.” Rand Journal of Economics 27(1): 32-59.

Brown, John Seely and Paul Duguid (2000). The Social Life of Information. Chapters 5 and 6, Harvard Business School Press.

Lerner, Josh and Jean Tirole (2000). “The Simple Economics of Open Source.” Working paper.

**November 2            KNOWLEDGE AS PROPERTY**

Etzkowitz, Henry and Andrew Webster. (1995). "Science as Intellectual Property" in S. Jasanoff, G.E. Markle, J.C. Petersen and T. Pinch (eds.) Handbook of Science and Technology Studies. Thousand Oaks, CA: Sage Publications.

Packer, Kathryn and Andrew Webster. (1996). "Patenting Culture in Science: Reinventing the Scientific Wheel of Credibility." Science, Technology, and Human Values. 21(4): 427-453.

Griliches, Zvi. (1990). "Patent Statistics as Economic Indicators: A Survey." Journal of Economic Literature. 28: 1661-1707.

Grindley, Peter C. and David J. Teece. (1997). "Managing Intellectual Capital: Licensing and Cross-Licensing in Semiconductors and Electronics." California Management Review 39(2): 8-58.

Staten, Vince. (1993). Can You Trust a Tomato in January? Touchstone Books. Short excerpt on "chewy chocolate chip cookies."

**November 9            POLITICS – THE ROLE OF THE STATE, ETHICS,  
CONFLICTS OF INTEREST**

Slaughter, Sheila and Gary Rhoades. (1996). "The Emergence of a Competitiveness Research and Development Policy Coalition and the Commercialization of Academic Science and Technology." Science, Technology, and Human Values. 21(3): 303-339.

Cohen, Linda R. and Roger G. Noll. (1994). "Privatizing Public Research" Scientific American 271(3) (September): 72-77.

Lee, Yong S. (1994). "Technology Transfer and Public Property in an Age of Global Economic Competition." Policy Studies Journal 22(2): 260-6.

**November 16<sup>th</sup>            METHODS: OVERVIEW OF DIFFERENT APPROACHES  
(ACTOR-NETWORK THEORY, BIBLIOMETRICS,  
NETWORK ANALYSIS, SEQUENCE METHODS,  
ORGANIZATIONAL THEORY)**

**November 30<sup>th</sup> KELLEY PORTER ON ORGANIZATIONAL FOUNDINGS**

John Padgett. (2000). "Organizational genesis, identity and control: The transformation of banking in Renaissance Florence."

Baron, James N., Diane Burton, and Michael Hannan. (1999). "Engineering bureaucracy: the genesis of formal policies, positions, and structures in high-technology firms." Journal of Law, Economics, and Organization. 15(1): 1-41. Also comment by Josh Lerner, pp. 42-46; Nickerson and Zenger, pp. 47-55.

Shane, Scott and D. Cable. (1999). "Social Relationships and the Financing of New Ventures." Working paper, University of Maryland.

**NO CLASS ON DECEMBER 7<sup>TH</sup>**

**December 14<sup>th</sup> WRAP UP AND PLAN FOR NEXT QUARTER**

### **Additional Recommended Readings:**

Argote, Linda. (1999) Organizational Learning: Creating, Retaining and Transferring Knowledge. Norwell, MA: Kluwer Academic Publishers.

Bird, Allan. (1996) "Careers as repositories of knowledge: considerations for boundary-less careers" in The boundary-less career: a new employment principle for a new organizational era. M.B. Arthur and D.M. Rousseau (eds.), 150-168. New York: Oxford University Press.

Blumenthal, David. (1992) "Academic-Industry Relations in the Life Sciences: Extent, Consequences, and Management," Journal of the American Medical Association. 268(23): 3344-3349.

Blumenthal, David, N.N. Causino, E. Campbell, & K.S. Lewis. (1996) "Relations between Academic Institutions and Industry in the Life Sciences – An Industry Survey." New England Journal of Medicine. 334: 368-373.

Brown, John Seely, and Paul Duguid. (1991) "Organizational Learning and communities of practice: towards a unified view of working, learning and innovation". Organization Science 2/1: 40-57.

Cohen, Wesley and Daniel Levinthal (1990) "Absorptive Capacity: A New Perspective on Learning and Innovation" Administrative Science Quarterly 35(1): 128-152.

Cowen, R. and D. Foray (1997). "The Economics of Codification and the Diffusion of Knowledge." Industrial and Corporate Change 6(3): 595-622.

Etzkowitz, Henry, Andrew Webster and Peter Healey (1998) Capitalizing Knowledge: New Intersections of Industry and Academia. Albany: SUNY Press.

Feldman, Maryann P. and Richard Florida (1994) "The Geographic Sources of Innovation," Annals of the Association of American Geographers. 84(2): 210-229.

Feller, Irwin (1990) "Universities as Engines of R&D Based Economic Growth: They Think They Can." Research Policy 19: 335-348.

Gibbons, Michael, Camille Limoges, Helga Nowotny, Simon Schwartzman, Peter Scott and Martin Trow (1994) The New Production of Knowledge. Thousand Oaks, CA: Sage.

Geiger, Roger (1986) To Advance Knowledge: The Growth of the American Research University. New York: Oxford University Press.

Jaffe, Adam. (1989) "Real Effects of Academic Research." American Economic Review. 79: 957-970.

Kogut, Bruce, and Udo Zander. (1992) "Knowledge of the firm, combinative capabilities, and the replication of technology". Organization Science 3/3: 383-397.

Kogut, Bruce, and Udo Zander. (1996) "What firms do? Coordination, identity and learning". Organization Science 7/5: 502-518.

Narin, Francis. (1994) "Patent Bibliometrics" Scientometrics 30(1): 147-155.

Narin, Francis, Kimberley S. Hamilton and Dominic Olivastro (1997) "The Increasing Linkage Between U.S. Technology and Public Science" Research Policy 26: 317-330.

Nonaka, Ikujiro, and H. Takeuchi. (1995) The knowledge creating company. New York: Oxford University Press.

Powell, Walter W. (1996) "Inter-Organizational Collaboration in the Biotechnology Industry." Journal of Institutional and Theoretical Economics 152(1): 197-215.

Slaughter, Sheila and Larry Leslie. (1997) Academic Capitalism: Politics, Policies, and The Entrepreneurial University. Baltimore: Johns Hopkins University Press.

Trajtenberg, Manuel. (1990) "A Penny for Your Quotes: Patent Citations and the Value of Information." Bell Journal of Economics. 21: 172-187.