MHR xxx
PhD Survey in Entrepreneurship & Innovation Management

Michael J. Leiblein
Spring 2014

E-mail: leiblein_1@cob.osu.edu
URL: http://fisher.osu.edu/~leiblein_1/
Phone: (614) 292-0071
Office: Fisher 848
Class: TBA.
Office Hours: By Appointment

Introduction to the Course:

This doctoral seminar will explore relationships between managerial action and the creation, capture, and delivery of economic value through innovation. The course takes a broad approach to these topics, reviewing notable studies in the economics of technical change, entrepreneurship, and the strategic management of innovation. In so doing, it draws attention to concepts, associations, and arguments relating innovation, organization, and organization evolution. Early course sessions focus on core challenges and concepts associated with research in entrepreneurship and innovation. Readings in later sessions address the nature and timing of technological innovations, including manner in which technological innovations alter the competitive landscape and yield new industries. Later readings address the interaction between incumbents and entrants, and efforts to foster innovation through novel forms of organization.

Course Objectives:

The course is equally concerned with providing students an overview of the most important topics in contemporary innovation management theory and with promoting their scholarly development. Acknowledging the importance of publishing for career progress, this course will have a significant focus on research practice. As an advanced PhD seminar, time will be devoted to discussing issues associated with the managing the dissertation process and the early research career. The overall intention is to provide students with experience conducting activities associated with high-quality research.

Required Materials:

Readings are listed in the detailed syllabus below. Most readings are available electronically through the library. Go to OSU library at http://library.osu.edu/. Click on Research Databases. Search for "Business Source Complete." Access Business Source Complete, search (e.g., insert article title or author name), and download #.pdf file. If you are accessing from off campus you will need your "name.#" osu account name and password. Please note that this syllabus draws attention to some notable books (and book chapters) in the field of entrepreneurship.

Instructional Procedure:

The course will be taught using a seminar style. This means each student must take responsibility for the success of the class. Simply reading the assigned materials is insufficient—students are expected to come to class fully prepared to discuss their: (a) evaluation of the assumptions and insights associated with the assigned papers, (b) analysis of how these papers collectively fit with other literatures, and (c) identify opportunities to contribute to the body of knowledge on this topic. All students will be responsible for a common set of readings.

As for any well-established research area, it is impossible to cover all the important contributions in the space of this seven week doctoral seminar. *Many of the topics that we cover in one day could be the topic of a whole doctoral seminar*. All that we can achieve in this short seminar is to introduce

you to the theoretical foundations of these fields and to expose you to some well-done research in promising and critical areas. It is your responsibility to expand your knowledge of the area through individual exploration and conversation with other faculty and students. To help out in your individual exploration, I have structured each session around a few basic questions that may guide our discussion and help us think about the next generation of research in an area. In addition, I have provided extra references on the topics covered and a supplement to this syllabus with citations to other important topics that we are unable to cover in this short seminar. The extra references are designed to help you start research on a particular topic (typically, the citations in bold font will be the starting point).

Evaluation: The grading plan describes the relative importance attached to each of the individual activities used to assign a course grade. The overall course grade will reflect your performance in terms of the: **(1) Class Contribution, (2) Paper Summaries (10%), (3) Idea pages / in-class questions (20%), and (4) Research Paper (50%).** Each of the grade components are described below.

1. Class Contribution and Discussion of Readings (20%). Each session will have a set of common readings **(see # in syllabus)**. Individual students will take responsibility for reviewing the remainder of the readings. While selected students are expected to *start* discussions on a paper with a 10 or 15 minute summary, fellow participants are expected to be active in ensuing discussions.

2. Paper summaries (10%). At least one student will be selected to write a summary review for each paper assigned in the course. These summaries will be from two to three pages (single spaced) in length. The first page should include a completed version of the "paper review form" at the end of this syllabus (an electronic version will be posted to Carmen).

   The remainder of the summary should report the research question and intended contribution of the paper, the conceptual logic presented in the paper, the propositions and evidence presented in the paper, and the ultimate contribution of the paper. More specifically, a high quality review will include the following. A brief summary of the paper. The objective of this initial task is to create context for the paper and outline its major arguments. A summary of the main contributions of the paper. This section should be more detailed. You are expected to show the main contributions of the paper. These contributions may refer to a particular field of study or your own understanding of a particular phenomenon. This section should therefore answer the question, "What have I learned from this paper?" This can include not only content discoveries (i.e., some novel concept of theory) but also methods discovery (i.e., how to go about being a researcher). A summary critique of the paper. This section should address the paper's conceptual shortcomings and/or technical flaws. You should also consider new opportunities for research and theoretical development.

   Students should share these review and synthesis statements with others in the course *at least two days prior* to our meeting. Students should also bring to class sufficient copies of their summary for distribution to each of the other students and the professor. These summaries will constitute a valuable study and reference aid as students prepare for the preliminary and final exams. While these summaries are important, *just because a student has not been assigned a particular reading to summarize does not mean that the student will*

not be held responsible for the material in that reading.

3. Idea pages (10%). Research creativity is a fundamental skill of the successful researcher. As you read the literature, you should always look for research opportunities that would create value to the literature. The purpose of the "idea page" is to provide you with an instrument for exploring research gaps in the literature. Each student should turn in 2 idea pages over the semester. Idea pages are **one page outlines** of a potential research question that would contribute to the literature discussed in class. The research idea should relate to the material discussed in class that day, and should discuss the *what, why* and *how* of your research idea. I will select one or two of the most promising idea pages and allocate time for discussion in class. This will provide authors of promising ideas with valuable feedback on their research idea. It is critical that students behave ethically in respecting "idea ownership rights" of others.

4. Research Paper (50%). A research paper is due the last day of class. The primary purpose of the research paper is to help students prepare for a research career, including the challenge of presenting difficult arguments in the abbreviated format of an academic conference. The paper should follow the submission guidelines for the *Academy of Management Journal, the Journal of Management, Management Science, Organization Science,* or the *Strategic Management Journal*.

   The research paper can take two forms. One alternative is to write a conceptual or empirical manuscript that could be submitted, after further revision, to one of the journals listed above. Certainly the quality should be adequate to send to a national meeting. This paper must be original work and relevant to the topic covered in the seminar. The second alternative is to develop a major research proposal, similar to a dissertation proposal. This proposal would include justification of the research question, theoretical background and literature review of research on a significant research question (including your value added contribution), and research design to test the question.

   I will not provide incomplete course grades given for incomplete papers. If you want to further polish the paper, it can be done after the course. This later work will not be graded, however. To receive a grade of "B" on these assignments, students must show a broad knowledge of the relevant research literature and an ability to integrate that literature. To receive an "A" on these assignments, students must show a broad knowledge of the relevant research literature, an ability to integrate that literature.

Course Schedule

Week 1: Introduction to Entrepreneurship & Innovation

Assigned Readings:

1. # Shane, S.A. and Sankaran Venkataraman. 2000. "The Promise of Entrepreneurship as a Field of Research." *Academy of Management Review* 25: 217–26.
2. # Van de Ven, A.H. 1986. Central problems in the management of innovation. *Management Science*, 32(5): 590-607.
3. # Baumol, William J. 1968. "Entrepreneurship in Economic Theory." *American Economic Review* 58: 64–71.
4. # Hayek, F.A. 1968. "Competition as a Discovery Procedure." New translation, *Quarterly Journal of Austrian Economics* 6, no. 3 (2002): 9–23.
5. # Kirzner, Israel M. 1997. "Entrepreneurial Discovery and the Competitive Market Process: An Austrian Approach." *Journal of Economic Literature* 35, no. 1: 60–85.
6. # Knight, F. 1921. Risk, Uncertainty and Profit. Boston: Houghton Mifflin. Part III, Chapter 9.
7. # Schumpeter, J. 1942. Capitalism, Socialism, and Democracy. New York: Harper & Row. Chapter VI through VIII.

Supplementary Material:

Acs, Zoltan J., and David B. Audretsch. 2003. "Innovation and Technological Change." Chapter 4 of Acs and Audretsch.

Baumol, William J. 2010. *The Microtheory of Innovative Entrepreneurship.* Princeton: Princeton University Press. Read introduction, "Bringing Entrepreneurship and Innovation into the Theory of Value," pp. 1–8.

Cantillon, Richard. 1755. *Essai sur la nature de commerce en géneral.* Henry Higgs, ed. London: Macmillan, 1931.

Cooper, A. C. 2004. Entrepreneurship: The past, the present, and the future. In Zoltan J. Acs and David B. Audretsch (Eds.) Handbook of Entrepreneurship Research: An Interdisciplinary Survey and Introduction, Kluwer Academic Publishers: Boston; pp.

Drucker, P. 1985. Innovation and Entrepreneurship. New York: Harper & Row, pp 21-36.

Foss, Nicolai J., and Peter G. Klein. 2010. "Alertness, Action, and the Antecedents of Entrepreneurship." Journal of Private Enterprise 25, no. 2: 145–64.

Hayek, F.A. 1968. "Competition as a Discovery Procedure." New translation, *Quarterly Journal of Austrian Economics* 6, no. 3 (2002): 9–23.

Kirzner, Israel M. 1973. *Competition and Entrepreneurship.* Chicago: University of Chicago Press.

Kirzner, Israel M. 2009. "The Alert and Creative Entrepreneur: A Clarification." *Small Business Economics* 32, no. 2: 145–52.

Klein, Peter G. 2008. "Opportunity Discovery, Entrepreneurial Action, and Economic Organization." *Strategic Entrepreneurship Journal* 2: 175-90.

Knight, Frank H. 1921. *Risk, Uncertainty, and Profit.* Boston: Hart, Schaffner, and Marx. Read chapters III.VII, III.VIII, III.IX, and III.X. Online edition here.

Knudsen, Thorbjørn, and Markus C. Becker. 2003. “Joseph A. Schumpeter: Unternehmer.” Translation. *Advances in Austrian Economics* 6: 235–66.

Knudsen, Thorbjørn, and Markus C. Becker. 2003. “The Entrepreneur at a Crucial Juncture in Schumpeter’s Work: Schumpeter's 1928 Handbook Entry Entrepreneur.” *Advances in Austrian Economics* 6: 199–234.

Langlois, Richard N., and Metin Cosgel. 1993. “Frank Knight on Risk, Uncertainty, and the Firm: A New Interpretation.” *Economic Inquiry* 31: 456–65.

Menger, Carl. 1871. *Principles of Economics.* Auburn, Ala.: Mises Institute, 2007. Read pp. 157–74, skim the rest.

Mises, Ludwig von. 1951. “Profit and Loss.” In Mises, *Planning for Freedom*. South Holland, Ill.: Libertarian Press, 1952.

Parker, S.C. 2004. The Economics of Self-Employment and Entrepreneurship, Chapter 2; Cambridge Press: Cambridge.

Roberts & H. I. Grousbeck & A. Bhide (Eds.), New Business Ventures and the Entrepreneur. Boston: Irwin McGraw-Hill; pp. 3-17.

Rothbard, Murray N. 1985. “Professor Hébert on Entrepreneurship.” In idem., *The Logic of Action Two: Applications and Criticism from the Austrian School.* Aldershott, U.K.: Edward Elgar, 1997, pp. 245–53.

Schumpeter, J. 1934. The Theory of Economic Development. Oxford: Oxford University Press.

Schumpeter, Joseph A. 1942. *Capitalism, Socialism, and Democracy.* London: Routledge, 1994. Read chapter 7, “The Process of Creative Destruction.”

Shane, S.A. 2008. The Illusions of Entrepreneurship. Yale University Press: New Haven Connecticut.

Stevenson, H. H. 1999. A perspective on entrepreneurship. In H. H. Stevenson & M. J.

Sutton, R. I. & Staw, B. M. 1995. What Theory is Not. Administrative Science Quarterly, 40(3): 371-384.

Week 2: Knowledge Search, Learning, and Recombination

1. # Fleming, Lee, and Olav Sorenson. "Science as a Map in Technological Search." Strategic Management Journal 25 (2004): 909-928. Jana.
2. # Gupta, A. K., Smith, K. G., & Shalley, C. E. 2006. The Interplay Between Exploration and Exploitation. The Academy of Management Journal, 49(4): 693-706.
3. # Siggelkow, N. & Rivkin, J. W. 2006. When Exploration Backfires: Unintended Consequences of Multilevel Organizational Search. Academy of Management Journal, 49(4): 779-795.
4. # Siggelkow, N. & Levinthal, D. Temporarily Divide and Conquer: Centralized, Decentralized and Reintegrated Organizational Approaches to Exploration and Adaptation, Organization Science, 2003.
5. # Lavie, D. & Rosenkopf, L. 2006. Balancing Exploration and Exploitation in Alliance Formation. Academy of Management Journal, 49(4): 797-818.
6. # Benner, M. J. & Tushman, M. 2002. Process Management and Technological Innovation: A Longitudinal Study of the Photography and Paint Industries. Administrative Science Quarterly, 47(4): 676-706.

Supplementary Material:

Adler, P. S., Goldoftas, B., & Levine, D. I. 1999. Flexibility versus efficiency? A case study of model changeovers in the Toyota production system. Organization Science, 10(1): 43-68.

Allen, Thomas J. (1977), Managing the Flow of Technology, Cambridge (MA): MIT Press, reprinted 1993, chapters 4-8.

Burgelman, Robert A. (1994), "Fading Memories: A Process Theory of Strategic Business Exit in Dynamic Environments", Administrative Science Quarterly.

Burgelman, Robert A. and Richard S. Rosenbloom, Technology Strategy: An evolutionary Process Perspective, Research on Technological Innovation, Management and Policy, Vol 4, pp 1-23. JAI Press, 1989. Reprinted in Managing Strategic Innovation and Change, eds. Tushman and Anderson, New York: Oxford University Press.

Chen, E. L. & Katila, R. 2008 forthcoming. Rival interpretations of balancing exploration and exploitation: Simultaneous or sequential?, The Blackwell Handbook on Technology and Innovation Management.

Cohen, W. M. and D.A. Levinthal, (1989), Innovation and learning: the two faces of R&D, *Economic Journal* 99(3): 569-596.

Cohen, W. and D. Levinthal (1990), "Absorptive Capacity: A New Perspective on Learning and Innovation", Administrative Science Quarterly, Vol. 35, pp. 128-152.

Fleming, Lee. "Recombinant Uncertainty in Technological Search." Management Science 47, no. 1 (January 2001). Marcel.

Gibson, C. B. & Birkinshaw, J. 2004. The Antecedents, Consequences, and Mediating Role of Organizational Ambidexterity. Academy of Management Journal, 47(2): 209-226.

Helfat, C. E. & Peteraf, M. A. 2003. The Dynamic Resource-Based View: Capability Lifecycles. Strategic Management Journal, 24(10): 997-1010.

Henderson, Rebecca and Ian Cockburn (1994), "Measuring Competence? Exploring Firm Effects in Pharmaceutical Research", Strategic Management Journal, Vol. 15 (Special Issue; winter), pp. 63-84.

Katila, R., & Ahuja, G. 2002. Something Old, Something New: A Longitudinal Study of Search Behavior and New Product Introductions. Academy of Management Journal, 45(6): 1183-1194.

Kleinbaum, A. M. & Tushman, M. L. 2007. Building bridges: the social structure of interdependent innovation. Strategic Entrepreneurship Journal, 1(1-2): 103-122.

Kogut, Bruce and Udo Zander (1992), "Knowledge of the Firm, Combinative Capabilities, and the Replication of Technology", Organization Science, Vol. 3, No. 3 (Aug), pp. 383-397.

Levitt, B. and J. G. March (1988). "Organizational learning." Annual Review of Sociology **14**: 319-340. (reviewed in competitive strategy seminar)

March, J.G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, **2**:71-87. (reviewed in competitive strategy seminar).

Week3: Industry Evolution: The role of Dominant Designs and Standards

1. **# Nelson, R. and S. Winter (1982), *An Evolutionary Theory of Economic Change*, Cambridge (MA): Harvard University Press, Parts I and II (pp. 1-136).**
2. #Abernathy, W. J. & Utterback, J. 1978. Patterns of industrial innovation. Technology Review, 50(June-July): 40-47.
3. # Tushman, Michael L. and Philip Anderson (1986), "Technological Discontinuities and Organizational Environments", *Administrative Science Quarterly*, Vol. 31, pp. 439-465.
4. **# Tushman, Michael L. and Lori Rosenkopf (1992), "Organizational Determinants of Technological Change: Towards a Sociology of Technological Evolution", in *Research in Organizational Behavior*, eds. B. M. Staw and L. L. Cummings, JAI Press, Greenwich, CT, pp. 311-347.**
5. #Suarez, F. F. & Utterback, J. M. 1995. Dominant designs and the survival of firms. Strategic Management Journal, 16(6): 415-430.

Supplementary Material

Abernathy, William J. and Kim Clark (1985), "Innovation: Mapping the Winds of Creative Destruction", *Research Policy*, No 14, pp. 3-22

Anderson, P. & Tushman, M. L. 1990. Technological discontinuities and dominant designs: A cyclical model of technological change. Administrative Science Quarterly, 35(4): 604-634.

Arthur, W. B. (1988), "Competing Technologies: An Overview", *Technical Change and Economic Theory*, ed. Dosi, et. al., New York: Columbia University Press, pp. 590-607.

Christensen, Clayton "How can great firms fail? Insights from the hard disk industry" Chapter 1 in The Innovator's Dilemma, Harvard Business School Press, 1997, pp 3-28.

Christensen, Clayton M. (1992), "The Limits of the Technology S-Curve", Parts I and II, *Production and Operation Management.*

Christensen, Clayton, M. and Bower, J.L. (1994) "Customer Power, Technology Investment, and the Failure of Leading Firms," *Strategic Management Journal*.

David, Paul (1985), "Clio and the Economics of QWERTY", *American Economic Review*, Vol. 75(2), pp. 332-337.

Foster, Richard. (1986). "The S-curve: A New Forecasting Tool." Chapter 4 in Innovation, The Attacker's Advantage, Summit Books, Simon and Schuster, New York (NY). pp. 88-111.

Gort, Michael and Steven Klepper (1982) "Time paths in the diffusion of product innovations" Economic Journal, 92: 630 - 53.

Klepper, S and E. Graddy (1990) "The Evolution of New Industries and the Determinants of Market Structure." The Rand Journal of Economics, Spring 1990, Vol. 21, No. 1.

Klepper, S. (1996). "Entry, Exit, Growth, and Innovation over the Product Life Cycle" *American Economic Review*, v86 n3 June 1996, pp. 562-83.

Mokyr, Joel. (1990) *The Lever of Riches: Technological Creativity and EconomicProgress*. New York: Oxford University Press. Chapters 1, 2, & 11.

Mokyr, Joel. (2002) *The Gifts of Athena*. Princeton, NJ: Princeton University Press.Chapters 1 & 7.

Nelson, Richard R. (1995), "Recent Evolutionary Theorizing about Economic Change", *Journal of Economic Literature*, Vol. XXXIII (March), pp. 48-90.

Sastry, M. Anjali (1997), "Problems and Paradoxes in a Model of Punctuated Organizational Changes", *Administrative Science Quarterly*, Vol. 42, No. 2 (Jun), pp. 237-275.

Schumpeter, Joseph (1942). *Capitalism, Socialism and Democracy*, 2nd ed., London:George Allen & Unwin, Ltd, pp. 61, 81-86.

Tushman, M. L. & Murmann, J. P. 1998. Dominant designs, technology cycles, and organizational outcomes. Research in Organizational Behavior, 20: 231-266.

Utterback, J. M. & Suarez, F. F. 1993. Innovation, competition, and industry structure. Research Policy, 22(1): 1-21.

Utterback, James. (1994). "Dominant Designs and the Survival of Firms", Chapters 2 in *Mastering the Dynamics of Innovation*, Harvard Business School Press, pp 23-55 and pp 79-102.

Week 4: Firm Responses to Technological Change

1. #Teece, D. J. 1986. Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy. Research Policy, 15(6).
2. **# Henderson, R.M. and K. Clark (1990). "Architectural Innovation: The Reconfiguration of Existing Product Technologies and the Failure of Established Firms," *Administrative Science Quarterly*, Vol. 35. pp. 9-30.**
3. # Henderson, Rebecca M. (1993), "Underinvestment and Incompetence As Responses to Radical Innovation: Evidence From the Photolithographic Alignment Equipment Industry", *Rand Journal of Economics*, Vol. 24, No. 2 (Summer), pp. 248-270.
4. **# von Hippel, Eric (1988), *The Sources of Innovation*, New York: Oxford University Press, chapters 1-4.**
5. #Pavitt, K. 2002. Innovating routines in the business firm: What corporate tasks should they be accomplishing. Industrial and Corporate Change, 11: 117-133.

Supplementary Material:

Abernathy, W. J. & Clark, K. B. 1985. Innovation: Mapping the winds of creative destruction. Research Policy, 14: 3-22.

Acs, Z. J. and David B. Audretsch (1988), "Innovation in Large and Small Firms: An Empirical Analysis," *American Economic Review*, Vol. 78, No. 4 (Sep).

Cohen, Wesley M. and Richard C. Levin (1989), "Empirical Studies of Innovation and Market Structure", chap. 18 of Handbook of Industrial Innovation, Vol. 2, eds. R. Schmalensee and R.D. Willig, Holland: Elsevier Science Publishers.

Cooper, A. C. & Schendel, D. 1976. Strategic Responses to Technological Threats. Business Horizons, 19(1): 61-69.

Gelijns and N. Rosenberg, National Academy Press. pp. 157-187 (Chapter 7).

Gilbert and Newbery (1982), "Preemptive Patenting and the Persistence of Monopoly", *American Economic Review*, Vol. 72(3), pp. 314-26.

Hargadon, A. & Sutton, R. I. 1997. Technology brokering and innovation in a product development firm. Administrative Science Quarterly, 42: 716-749.

Henderson, Rebecca and Ian Cockburn (1996), "Scale, Scope, and Spillovers: The Determinants of Research Productivity in Drug Discovery", Rand Journal of Economics, Vol. 27, No. 1, Pg. 32-59.

Kim, D. J. & Kogut, B. 1996. Technological platforms and diversification. Organization Science, 7(3): 283-301.

Leonard-Barton, D. 1992. Core capabilities and core rigidities: A paradox in management product development. Strategic Management Journal, 13(Special Issue): 111-125.

Mitchell, W. 1989. Whether and when? Probability and timing of incumbents' entry into . emerging industrial subfields. Administrative Science Quarterly, 34: 208-230.

Nelson, R. R., Peterhansl, A., & Sampat, B. 2004. Why and how innovations get adopted: A tale of four models. Industrial and Corporate Change, 13: 679-699.

Pavitt, K. 1998. Technologies, products and organization in the innovating firm: What Adam Smith tells us and Joseph Schumpeter doesn't. Industrial and Corporate Change, 7: 433-452.

Pisano, G. P. 1990. The Research-and-Development Boundaries of the Firm - an Empirical-Analysis. Administrative Science Quarterly, 35(1): 153-176.

Reinganum, J. F. (1983), "Uncertain Innovation and the Persistence of Monopoly", *American Economic Review*, Vol. 73, pp. 741-48.

Rosenkopf, L. & Almeida, P. 2003. Overcoming local search through alliances and mobility. Management Science, 49(6): 751-766.

Stern, Scott (1994). "Incentives and Focus in University and Industrial Research: The Case of Synthetic Insulin," *The University-Industry Interface and Medical Innovation*, ed. A.

Tripsas, Mary (1997), "Unravelling the Process of Creative Destruction: Complementary Assets and Incumbent Survival in the Typesetter Industry", *Strategic Management Journal Special Issue*.

Tushman, M. L. & Anderson, P. 1986. Technological discontinuities & organizational environments. Administrative Science Quarterly, 31: 439-465.

Tushman, M. L. & Rosenkopf, L. 1992. Organizational determinants of technological change: Toward a sociology of technological evolution. Research in Organizational Behavior, 14: 311-347.

Week 5: Networks and Innovation

1. **# Ahuja, G. (2000) "Collaboration Networks, Structural Holes, and Innovation: A Longitudinal Study." Administrative Science Quarterly 45: 425-455.**
2. # Hargadon, A. & Sutton, R.I. 1997. Technology brokering and innovation in a product development firm. *Administrative Science Quarterly* 42: 716–749.
3. # Rosenkopf, L. & Nerkar, A. 2001. Beyond local search: Boundary-spanning exploration, and impact in the optical disk industry. *Strategic Management Journal*, 22: 287-306.
4. # Stuart TE. 1998. Network positions and propensities to collaborate: An investigation of strategic alliance formation in a high-technology industry. *Administrative Science Quarterly*, 43: 668-698.
5. # Stuart, T.E. & Podolny, J.M. 1996. Local search and the evolution of technological capabilities. *Strategic Management Journal*, 17: 21-38

Supplementary Materials:

Gulati, R. and M. Garguilo (1999). "Where do interorganizational networks come from?" American Journal of Sociology 104: 1439-1493.

Liebeskind, J.P., Oliver, A.L., Zucker, L. & Brewer, M. 1996. Social networks, learning, and flexibility: Sourcing scientific knowledge in new biotechnology firms. *Organization Science*, 7(4): 428-443.

Powell, W.W., Koput, K.W. & Smith-Doerr L. 1996. Interorganizational collaboration and the locus of innovation: Networks of learning in biotechnology. *Administrative Science Quarterly*, 41: 116-145.

Sorenson, O. and T. Stuart, (2001) Syndication networks and the spatial distribution of venture capital investments, *American Journal of Sociology* 106 (6): 1546-1588.

Takeishi, A. 2001. Bridging inter- and intra-firm boundaries: Management of supplier involvement in automobile product development. *Strategic Management Journal*, 22:403-433.

Week 6: Knowledge Spillovers and the Geography of Innovation

1. # Alcacer, Juan and Wilbur Chung, "Knowledge Seeking and Location Choice of Foreign Direct Investment in the United States," *Management Science* 48(12): 1534-1554.
2. # Almeida, P and B. Kogut (1999) Localization of Knowledge and the Mobility of Engineers in Regional Networks. Management Sci. 45 905-917.
3. # Audretsch, David B. and Maryann P. Feldman (1996), "R&D Spillovers and the Geography of Innovation and Production", American Economic Review, Vol. 86, No. 3 (June).
4. # Jaffe, Adam B., Manuel Trajtenberg and Rebecca Henderson (1993), "Geographic Localization of Knowledge Spillovers as Evidenced by Patent Citations", Quarterly Journal of Economics, Vol 108, Vol. 3 (Aug), pp. 577-98.
5. # Saxenian, A. (1991), "The Origins and Dynamics of Production Networks in Silicon Valley", *Research Policy*, Vol. 20, No. 5, pp. 423-437.

Supplementary Material

Agrawal, Ajay; Iain Cockburn; and John McHale (2003) "Gone But Not Forgotten: Labor Flows, Knowledge Spillovers, and Enduring Social Capital," National Bureau of Economic Research Working Paper 9950, September 2003

Audretsch, D. B. and P. Stephan, (1996), Company-scientist locational links: the case of biotechnology, *American Economic Review* 86(4): 641-652.

Bell, M. & Pavitt, K. 1993. Accumulating technological capability in developing countries. *Proceedings of The World Bank Annual Conference on Development Economics 1992*: 257-281.

Feldman and M.S. Gertler (Eds.), *The Oxford Handbook of Economic Geography*, (Oxford University Press, Oxford), 253-274.

Florida, R. (2002) "Bohemia & Economic Geography," Journal of Economic Geography, 2, 55-71.

Florida, R. L., and M. Kenney (1988), Venture capital, high technology and regional development, *Regional Studies* 22 (1): 33-48.

Frost, T.S. 2001. The geographic sources of foreign subsidiaries' innovations. *Strategic Management Journal*, 22: 101-123

Glaeser, E. and G. Ellison (1997) "Geographic Concentration in U.S. Manufacturing Industries: A Dartboard Approach," Journal of Political Economy 105: 889-927.

Glaeser, E., H. Kallal, J. Scheinkman and A. Shleifer (1992) "Growth in Cities," J*ournal of Political Economy*, 100: 1126-1152.

Griliches, Zvi (1992) "The search for R&D Spillovers," *The Scandinavian Journal of Economics*, Vol. 94, Supplement, pp. 29-47.

Jacobs, J. (1969), *The Economy of Cities* (Random House, New York).

Jaffe, A. B., (1989), Real effects of academic research, *American Economic Review* 79(5): 957-970.

Jaffe, Adam B., Manuel Trajtenberg and Rebecca Henderson (1993), "Geographic Localization of Knowledge Spillovers as Evidenced by Patent Citations", Quarterly Journal of Economics, Vol 108, Vol. 3 (Aug), pp. 577-98.

Krugman, P. (1991), "Increasing Returns and Economic Geography," *Journal of Political Economy*, 99: 483-499.

Krugman, P., (1991), Geography and Trade, (MIT Press: Cambridge).

Kuemmerle, W. 1999. Foreign direct investment in industrial research in the pharmaceutical and electronics industries - Results from a survey of multinational firms. *Research Policy*, 28(2,3): 179-193.

Nobel, R. & Birkinshaw, J. 1998. Innovation in multinational corporations: Control and communication patterns in international R&D operations. *Strategic Management Journal*, 19: 479-496.

Owen-Smith, J and W. Powell (2004) "Knowledge Networks as Channels an Conduits: The Effects of Spillovers in the Boston Biotechnology Community," *Organization Science.*

Porter, M.E. (1990), *The Comparative Advantage of Nations* (Free Press, New York).

Porter, M. E., (2000), Locations, clusters, and company strategy, in G.L. Clark, M.P.

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Week 8 (Finals Week) : Presentations

How to Read an Academic Article
(adapted from work by Peter Klein)

As an academic you will need to become not only avid readers but also efficient readers, able to extract the maximum information from an academic article with the least effort. You will need to learn, in other words, the art of the skim. While many of these tips may be painfully obvious, some students have told me they appreciate having this information. So, I reproduce the handout below. Any comments and suggestions for improvement?

1. Caveat: no single style works for everyone!
2. Klein's basic steps for skimming, scanning, processing…
    a. Read the abstract (if provided); Read the introduction; Read the conclusion.
    b. Skim the middle, looking at section titles, tables, figures, etc.—try to get a feel for the style and flow of the article.
        1. Is it methodological, conceptual, theoretical (verbal or mathematical), empirical, or something else?
        2. Is it primarily a survey, a novel theoretical contribution, an empirical application of an existing theory or technique, a critique, or something else?
    c. Go back and read the whole thing quickly, skipping equations, most figures and tables.
    d. Go back and read the whole thing carefully, focusing on the sections or areas that seem most important.
3. Once you've grasped the basic argument the author is trying to make, critique it!
    a. Ask if the argument makes sense. Is it internally consistent? Well supported by argument or evidence? (This skill takes some experience to develop!).
    b. Compare the article to others you've read on the same or a closely related subject. (If this is the first paper you've read in a particular subject area, find some more and skim them. Introductions and conclusions are key.) Compare and contrast. Are the arguments consistent, contradictory, orthogonal?
    c. Use Google Scholar, the Social Sciences Citation Index, publisher web pages, and other resources to find articles that cite the article you're reading. See what they say about it. See if it's mentioned on blogs, groups, etc.
    d. Check out a reference work, e.g. a review or survey article, to see how this article fits in the broader context of its subject area.

How to Prepare a Literature Review
(adapted from a post on the Organizations & Markets blog)

A country practitioner was retained one day by a client whose red cow had broken into his neighbor's grain field, and litigation ensued. The practitioner went carefully over the details of the facts in the case with a student in his office, and assigned to the student the duty of "looking up the law" on the subject. Sometime after he asked the student what success he had had with the authorities bearing on the case. The student replied: "'Squire, I have searched diligently through every law book in the library, and there isn't a red cow case in them."

The joke of course is that this lawyer thought the issue was red cows rather than trespassing, negligence, and other abstract legal concepts. This was a lot less funny when I realized that when I was in college and my first year or two of grad school, this kind of substantively-focused literalism was exactly how I would approach doing a lit review for a research paper. I would open up Sociofile (now called "Sociological Abstracts") and search for substantive key terms, something like "social movements AND television." That is, I was searching for prior literature on my substantive issue.

A substantive literature search is worth doing to a certain extent, but it's not nearly as important as getting (and understanding) the underlying theory. A single theory often involves wildly disparate empirical issues. So how do you do the theoretical aspect of the review? Well, to a large extent it's just an issue of learning a large body of literature inside out, but that takes a very long time. In the meantime, here's the advice I give to my grad students.

1. Use Business Source Complete, Google Scholar, etc. for queries of key terms but realize that this will only be about a quarter of the work. These databases aren't very good at queries by theory.
2. Figure out what theoretical problems are at issue in your work. These problems may be the result of inconsistencies in the assumptions or causal mechanisms in applications of the theory, inconsistencies across multiple theories addressing a single phenomenon, or inconsistencies or limitations in the empirical evidence. Discuss these issues with your friends and mentors. They may suggest explanations or theoretical solutions you've never heard of. Also ask them for specific citations that they recommend.
3. Search for essays on these theories in high quality journals such as the *Strategic Management Journal*, *Organization Science*, or *Management Science* (or even the annual review issues from the *Journal of Management*). If you're lucky, you may even find a graduate seminar on your target literature. You can also use a few empirical publications that you've read or which are recommended to you as providing particularly good theoretical syntheses.
4. Use these to snowball sample, both backwards and forwards in time. To snowball backwards, read the articles and whenever they mention a citation that sounds interesting, add it to your list. To snowball forward, use Google Scholar to do a cited reference search of your key citations and again, take the stuff that looks promising. As you read, you'll find still more good cites.
5. Actually read and pull out the theoretical problems involved and how they hang together in the different articles. Try to find one to three important theoretical problems and use each of them to derive a proposition that can be operationalized into an empirically-testable hypothesis. Read empirical articles that you admire and note how they structure their lit review / theory section. Note that this step is as much imposing structure on the literature as about recognizing the structure that pre-exists because, frankly, the literature is often muddled.
6. Get back to your advisors and colleagues once you've finished doing all of this and we can talk about actually doing the empirical part of the project.

Writing "One-Pagers"

A "one pager" is a succinct summary and commentary on either a book or journal article. It is intended to establish that you can grasp the key points of a particular work, and contribute constructively to scholarly dialogue. I have found it to be an effective device to interpret information. As the name suggests, it *must* be kept to one page.

Component Parts

There are four parts to a one pager:

1. Provide an accurate citation of the book/article
2. Include your own name and relevant details.
3. Use three bullet points to provide a holistic summary. Each paragraph should be short, and pick up on a critical part of the thesis. If you're reading the text with a specific reason in mind (e.g. a literature review on a particular subject), the summary can be focused on that aspect of the piece.
4. Use three bullet points for constructive analysis. These might be aspects of the manuscript that you didn't understand, sections you feel could/should be expanded, or parts you outright disagree with. The three points should demonstrate that you can critically assess the material, think creatively about how to build upon it, and draw upon a wider knowledge of the subject.

Finally

As with most skills you can develop your ability to write a one-pager with practice. It's a method to focus your attention whilst reading an article, and therefore – I find – can drastically reduce the time it takes to absorb material, and increase the effectiveness of your reading.

Citation: (Author. Year. "Title." Journal. Volume (Issue): Pages.)

Type:	Exploratory (e.g., taxonomies, descriptive), theoretical, or empirical				
Research Question:					
Argument:					
Framing:					
Theoretical Lens(es):	Industrial Organization, BTOF, Resource / Strategic Factor Market, or Dynamic Capability Logic, Transaction Cost Economics, Real Options, Agency theory, _____				
Theoretical Approach:	Verbal explication; analytical / mathematical modeling; empirical examination				
Main Hypotheses:	H1.				
	H2.				
	H3.				
	H4.				
Constructs:	(name)	(nominal definition)			
	(name)	(nominal definition)			
	(name)	(nominal definition)			
	(name)	(nominal definition)			
Context:	(e.g. industry, phenomenon)				
Unit of Analysis:	(e.g. firm, individual, firm-year, event)				
Sampling Strategy:	archival; survey; case study; or experiment				
Sample:	(description)			panel; cross section	
Measures:	class	construct	description	range	type
	DV, IV, or control	(name)			continuous; binary; ordinal; or cardinal
Empirical Model(s):	(e.g., OLS, GLS, Probit / logit, Fixed-Effects, Cox / event-history; GMM)				
Key Findings:					
Contribution:					

Additional Thoughts on Reading and Reviewing

The following points offer criteria for reviewing papers suggested by the BPS division of the Academy of Management.

- Introduction
  - Is there a clear research question, with a solid motivation behind it?
  - Is the research question interesting?
  - After reading the introduction, did you find yourself motivated to read further?
- Theory
  - Does the submission contain a well-developed and articulated theoretical framework?
  - Are the core concepts of the submission clearly defined?
  - Is the logic behind the hypotheses persuasive?
  - Is extant literature appropriately reflected in the submission, or are critical references missing?
  - Do the hypotheses or propositions logically flow from the theory?
- Method (for empirical papers)
  - Are the sample and variables appropriate for the hypotheses?
  - Is the data collection method consistent with the analytical technique(s) applied?
  - Does the study have internal and external validity?
  - Are the analytical techniques appropriate for the theory and research questions and were they applied appropriately.
- Results (for empirical papers)
  - Are the results reported in an understandable way?
  - Are there alternative explanations for the results, and if so, are these adequately controlled for in the analyses?
- Contribution
  - Does the submission make a value-added contribution to existing research?
  - Does the submission stimulate thought or debate?
  - Do the authors discuss the implications of the work for the scientific and practice community?

About Your Instructor
Michael J. Leiblein, Ph.D.

Michael J. Leiblein is a Professor of Strategic Management. At the Fisher College of Business, Leiblein teaches the Technology Strategy, Advanced Strategic Analysis, and the Innovation Field Study elective courses in the MBA Program. He has previously taught the MBA business core and MBA corporate core strategy courses, electives on corporate strategy and strategy consulting, and a variety of executive and PhD level courses. He has won multiple outstanding core course instructor awards, led masters, executive, and PhD level seminars in the US and Europe for academic and non-academic institutions, and is a strategy and innovation subject matter expert for the *Accenture Academy*.

Michael's academic research focuses on the relationship between organizational form and firm performance in technology-intensive industries. His work has been published in leading academic journals such as the *Strategic Management Journal,* the *Academy of Management Journal,* the *Journal of Industrial Economics,* and the *Journal of Management* and has received international media coverage in outlets such as *The Financial Times* (London), *Les Echos, Red Herring,* and *USA Today*. Michael's papers have been recognized with several international academic awards including the 1994 Glueck Best Paper Award, an honorable mention for the 1995 Best Paper Award in Technology and Innovation Management, Distinguished Paper Awards from the Business Policy and Strategy division of the Academy of Management in 2005 and 2007, and Distinguished Paper Award from the Operations division of the Academy of Management in 2009. His dissertation research on the adoption of new technologies in the U.S. semiconductor industry was recognized by the Academy of Management as one of the best dissertations in the field of strategic management (1997 Free Press Award). He is the primary investigatory on a National Science Foundation grant that extends his prior work on the causes and innovative consequences of organizational decisions in the global semiconductor industry and has received multiple grants from the General Electric National Center for the Middle Market to explore effective innovation practices across different sized firms and to compare the effectiveness of various "open innovation" practices.

Michael serves as member of several prestigious editorial boards including the *Strategic Management Journal* (since 2004)*,* the leading academic journal in the field of strategic management, the *Academy of Management Review* (since 2005), the Journal of Management Studies (since 2013), and as an advisory panelist for the *National Science Foundation* (since 2011). In addition, he has served as an editorial board member (2002 through 2007) and as an associate editor (2008 through 2011) at the *Journal of Management,* as a member of the executive committee for the Business Policy & Strategy division of the *Academy of Management*, and as an officer of the Competitive Strategy division of the *Strategic Management Society*. At Ohio State, he serves as a co-director for OSU's multidisciplinary Food Innovation Center and as a founding member and academic director of the Fisher College Innovation Initiative. He has consulted in the United States, Europe, and Asia for a variety of organizations and associations.

Michael received his Ph.D. from Purdue University and his M.B.A. and a B.S. in Electrical Engineering from Rensselaer Polytechnic Institute. Prior to his doctoral studies, he worked as a consultant for Andersen Consulting (Accenture) and as an engineer for Johnson Controls. In his free time, Michael enjoys attending collegiate sporting events, opera, and hiking through New England and the American Southwest.

Additional Topics

Introduction and Overview

Gunfire at Sea: A Case Study of Innovation (Abridged) (HBS Case #1-698-081). (This reading is also in: Tushman, M. & Anderson, P. (Eds.). 2004. Managing strategic innovation and change : a collection of readings (2nd ed.). New York: Oxford University Press, pp. 59-69.)

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