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15.374 Innovation-Driven Advantage

Fall 2017 (H2)
E51-335
Section A: MWF 08:30am-10:00am
Section B: MWF 10:00am-11:30am

Teaching Assistants:
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COURSE PURPOSE

In what sense can organizations ever claim to "manage" innovation? Creativity, invention, innovation: this sounds like a list of activities that should resist any attempt to routinize them. If we were to ask a random set of people in the streets where good ideas come from, chances are that they would mention something like a "Eureka moment" or a "Flash of Genius." Think of Archimedes in his tub, or Isaac Newton's otherworldly contemplations being interrupted by the fall of an Apple.

And yet, we now understand that there is much more to the creative process and innovating than merely luck. There is ample research suggesting that innovation is often a collective process, rather than the work of lone geniuses. In the same vein, we understand much more about the kinds of environments that are more likely to be fruitful grounds for an elevated rate of creative insights.

The course has four parts. The first simply tries to answer the question "where do innovations come from?" Fifty years ago, we thought we knew the answer to this question: from the R&D labs of large, vertically integrated, diversified corporations such as AT&T, Merck, DuPont, GE, IBM, etc. With the demise of the Central R&D lab as an engine of innovation, we now know that a firm cannot count solely on its internal capabilities to innovate successfully. As a result, we will spend the time to explore alternative sources for ideas, such as local innovation ecosystems, distributed crowds, or latent innovators (e.g., participants in innovation contests).

The second part of the course asks how people engaged in the innovation process (the so-called "smart creatives" in the parlance of a recent book by Eric Schmidt and Jonathan Rosenberg) can ever be managed. We know that they tend to be an unruly bunch. Command and control is unlikely to work well.

But what will? And should we think about rewarding innovators if they happen to work for someone else — a firm we are thinking about acquiring, or a start-up would like to partner with us?

The third part of the course tries to shed light on the innovative process itself. Are there best practices that one can bring to bear? Or is everything we know contingent of the details of the industry, the time period, etc. Can we ever hope to be systematic? So we will talk about stage-gate product and service development processes, as well as portfolio techniques and ways to think about building an experimentation capacity for your organization.

The fourth and final part of the course tries to link these insights to the central problem of competition in innovation-intensive industries. Everyone talks about "disruptive innovation" these days. The term has become a buzzword. I will try to help you think clearly about it. This will start from a set of clear definitions (e.g., if "disruptive" is just a different way to say or mean "novel," why do we need a new term at all?). But the more interesting insights, I believe, will come from drawing connections between the first part of the class — which are organizational in nature — with the central problem of strategy: resolving the tension between the creation and the capture of economic value.

Attendance & Class Preparation

We will open every class by asking someone to briefly summarize one of the readings, or to briefly summarize the case. In the case of a reading, you should be able to briefly outline the problem that the article addresses, describe the core points of the reading, and offer your analysis of the strengths and weaknesses of the reading's central argument. In the case of a case, you should be able to identify the key issues, problems and opportunities facing the central protagonists, to articulate and evaluate alternative approaches to the problems, and to describe the course of action that you recommend and the reasons for your recommendations.

Recommended Books

Students often ask me to recommend a book, or set of books, about innovation strategy, or the management innovation. And I am usually reluctant to do so. The reason is that there is no book that is truly integrative of different perspectives. The typical book on innovation starts from an interesting nugget of wisdom, and then extends it over the course of an entire volume to try to persuade the reader that the "problem of innovation" has been solved. The shelf life of this kind of guru-authored work is extremely short—on the order of months. The books I list below are not perfect, but in my view, they at least escape this rather common trap. Certainly, reading them made me mull their key ideas over, and they have inspired some research. I am hoping that you will find their reading rewarding as well. If you find yourself pressed for time this semester, do not worry. They are not required for the class. You can consider this just a suggested reading list on your next long flight to Asia or Europe.

Schmidt, Eric and Jonathan Rosenberg. 2014. *How Google Works.* New York: Grand Central Publishing.

Gans, Joshua. 2016. *The Disruption Dilemma.* Cambridge, MA: The MIT Press (note: will be released later this year).

Gertner, Jon. 2012. *The Idea Factory: Bell Labs and the Great Age of American Innovation.* New York: Penguin Press.

Harford, Tim. 2011. *Adapt: Why Success Always Starts with Failure.* New York: Farrar, Strauss & Giroux.

Johnson, Steven. 2010. *Where Good Ideas Come From: The Natural History of Innovation.* New York: Riverhead Books.

Lerner, Josh. 2012. *The Architecture of Innovation*. Boston, MA: Harvard Business School Press.

von Hippel, Eric. 2006. *Democratizing Innovation.* Cambridge, MA: The MIT Press.

Utterback, James. 1994. *Mastering the Dynamics of Innovation*. Boston, MA: Harvard Business School Press.

REQUIREMENTS, GRADING, & DUE DATES

- Active Class Participation (25%). For each class, each student is expected to prepare readings and case studies, listen closely to class discussion, and share their ideas. More than one absence from the class will severely impact this component of the grade.
- Four Individual Case Memos (4×7.5%=30%). We will be asking you to write four short case memos. These will center on a question (or set of questions) useful to help you focus on the strategic dilemma faced by the protagonists in the case. *Two pages maximum*. Grading will be on a √/√+/√- basis. The cases are: Google X, Netflix, Threadless, and Disney/Pixar. Please bring them in hard copy and hand them in to the TA at the beginning of the class in which they will be discussed.
- Group Homework Assignments (3×15%=45%). Three group homework assignments will be given. Assignment #1 (due November 15th) asks you to outline the contours of novel grant mechanism designed to stimulate high-risk research at the National Institutes of Health (NIH). Assignment #2 (due December 1st) asks you to design a project portfolio for Le Petit Chef, a French microwave oven company. Assignment #3 (due December 6th) asks you to "core" a new baby-sitting/nanny platform, with particular attention given to platform governance issues. Each should be a *maximum of four to five pages, plus exhibits*. They will need to be uploaded onto Stellar, where you can find the precise deliverables and due dates.

COURSE MATERIALS

Assigned case readings are available on Stellar. The site is a critical complement to the lectures. Before each class, Stellar will include links to points of interest (e.g., company websites), as well as supplementary reading materials and reading guides for several of the cases included in the course. We will also post the slides after each lecture. Finally, Stellar will include key course information such as the syllabus, assignments, due dates, and updates. You should check the site on a regular basis.

GROUP FORMATION

You should organize into groups of **four** or **five** students to complete the group assignments. It is of no consequence if the composition of your group spans the two sections for the class, with one caveat: On December 1st, it is imperative that you appear in class with your whole group. Please take this constraint into account when forming your groups! The TAs will create a Google document to help the group formation process.

Course Outline

Introduction		M	Oct 30	
Sources of Innovation				
Innovating from Within	Case: Google X	W	Nov 1	Memo #1 Due
Ecosystem Stakeholders	Negotiation Exercise: Flash of Genius	F	Nov 3	
Engaging a Local Innovation Ecosystem	Guest Lecturer: Scott Stern	M	Nov 6	
Prizes & Contests	Case: Netflix Prize	W	Nov 8	Memo #2 Due
Innovating with the Crowd	Case: Threadless	M	Nov 13	Memo #3 Due
Managing Innovators				
Incentives for Innovation	Case: Breakthrough Research Grants	W	Nov 15	Assgnmt. #1 Due
Building and Managing an Innovation Culture	Guest Lecturer: Jim Dunn	F	Nov 17	
Vertical Integration and Innovators' Incentives	Case: Disney and the Pixar Acquisition	M	Nov 20	Memo #4 Due
Organizing the Innovation Process				
Lean Start-up & Experimentation	Guest Lecturer: Christian Catalini	W	Nov 22	
Introduction to Design Thinking	Guest Lecturer: Matthew Kressy	M	Nov 27	
Corporate Venture Capital	Guest Lecturer: Babak Movassaghi	W	Nov 29	
Managing Innovation Project Portfolios	Case: Le Petit Chef	F	Dec 1	Assgnmt. #2 Due
Bringing Innovations to Market				
Commercialization Strategies	Lecture	M	Dec 4	
Platforms Everywhere? Part I: Coring	Lecture	W	Dec 6	Assgnmt. #3 Due
Platforms Everywhere? Part II: Tipping	Lecture	M	Dec 11	
Wrap-up		W	Dec 13	

Notes:

- The November 3rd and December 1st sessions will last 30 minutes more than usual: Section A will run from 8:00am to 10:00am; Section B will run from 10:00am to 12:00pm. Class will be in E51-335.
- Individual memos are due at the start of the class indicated and should be handed in in hard copy to the TA.
- Group assignments are due at 8:00 am on the date indicated and should be uploaded onto Stellar.

Class 1 **Introduction** October 30

Gladwell, Malcolm. 2005. *"The Bakeoff."* The New Yorker, September 5, pp. 124-133.

Questions for Discussion

The article describes three ways to organize a team in charge of "reinventing the cookie." First read until page 128, right before the paragraph that begins with *"The Mattson kitchens are a series of large…"* I'd like you to ponder the following question (before you learn the results of this unusual experiment): If you had the choice, which team would you have liked to manage, and why? [Try to record your opinion honestly]. Then read until the end. Where you surprised by the result? Why/Why not?

Class 2 **Innovating from Within** November 1

Gertner, Jon. 2014. "The Truth About Google X." *Fast Company,* May Issue.

Stone, Brad. 2013. "Inside Google's Secret Lab." *Bloomberg Businessweek,* May 22.

Lerner, Josh. 2012. "Where R&D Came From." Chapter 2 in *The Architecture of Innovation*, pp. 19-36. Boston, MA: Harvard Business School Press.

Optional Reading

Lewis-Kraus, Gideon. 2016. "The Great AI Awakening." The New York Times Magazine, December 14th. Available at https://www.nytimes.com/2016/12/14/magazine/the-great-ai-awakening.html.

Nelson, Richard. 1962. "The Link Between Science and Invention: The Case of the Transistor." *The Rate & Direction of Inventive Activity: Economic and Social Factors*. National Bureau of Economic Research, Princeton University Press, pp. 549-586.

Questions for Discussion

Should Google X (1) be dramatically pared down or shut down; (2) continue at about the same level of corporate funding; (3) be dramatically scaled up (e.g., 2 × the level of funding?) Why/why not? How should the performance of a division like X be evaluated?

Class 3 **Incentives for Ecosystem Stakeholders** November 3
Case: Flash of Genius

In-Class Video Excerpt: *Flash of Genius,* 2008.

Bunnell, David, and Adam Brate. 2000. "The Benevolent Predator." Chapter 4 in *Making the Cisco Connection,* John Wiley & Sons, pp. 59-88.

Gans, Joshua, and Scott Stern. 2015. "Value Chain Strategy." Chapter 7, *Entrepreneurial Strategy,* mimeo, MIT Sloan School.

Optional Reading
Weiblen, Tobias, and Henry W. Chesbrough. 2015. "Engaging with Startups to Enhance Corporate Innovation." *California Management Review,* **57**(2), pp. 66-90.

Class 4 **Engaging a Local Innovation System** November 6
Guest Lecturer: Scott Stern, MIT Sloan

Porter, Michael E. and Scott Stern. 2001. "Innovation: Location Matters." *Sloan Management Review,* **42**(4), pp. 28-36.

Class 5 **Finding External Innovators: Prizes & Competitions** November 8
Case: Designing the Netflix Prize (A) [HBS #9-615-015]

MacCormack, Alan, Murray, Fiona and Erika Wagner. 2013. "Spurring Innovation Through Competitions." *Sloan Management Review,* **55**(1), pp. 25-32.

Questions for Discussion
Why is Hastings choosing to design a contest to solve the Cinematch performance problem?
Is Cinematch an appropriate setting for such a contest? Why?
What contest design parameters would you recommend Hastings adopt as he is setting up the contest?

Class 6 **User Innovation & Crowdsourcing** November 13

Case: Threadless: The Business of Community [HBS #9-608-707]

King, Andrew and Karim R. Lakhani. 2013. "Using Open Innovation to Identify the Best Ideas." *Sloan Management Review,* **55**(1), pp. 41-48.

von Hippel, Eric, Susumu Ogawa, and Jeroen P.J. De Jong. 2011. "The Age of the Consumer-Innovator." *Sloan Management Review,* **53**(1), pp. 27-35.

Questions for Discussion

What are the barriers to entry for this kind of business? In what other industries might this model work? What should be Threadless' response to the offer from the large retailer, and Why?

Class 7 **Incentives for Innovation** November 15

Case: Funding Breakthrough Research at the NIH [Sloan #15-161]

Hartford, Tim. *"The Airplane that Saved the World."* Slate, 5/16/2011.

Questions for Discussion

What is the problem that Joan is trying to solve? How does it manifest itself in the day-to day?
What features (if any) of the HHMI model should Joan think about importing into the new proposed R99 "breakthrough research" grant mechanism?
How would you design the R99 grant program? Think along multiple decisions (eligibility, review process, timeline and renewal, evaluation, etc.)

Class 8 **Building and Managing an Innovation Culture** November 17

Guest Lecturer: Jim Dunn, Chief Talent Officer at Parkland Health & Hospital System

Lemann, Nicholas. 2014. *"When G.M. was Google."* The New Yorker, December 1, pp. 76-82.

Netflix Culture: Freedom & Responsibility. Slide deck.

Schein, Edgar H. 2000. "The Benevolent Predator." Chapter 1 "Defining Organizational Culture" and Chapter 2 "Uncovering the Levels of Culture" in *Organizational Culture & Leadership,* Jossey-Bass, pp. 3-27.

Optional Reading

Schmidt, Eric and Jonathan Rosenberg. 2014. *How Google Works.* New York: Grand Central Publishing.

Class 9 **Vertical Integration and Innovators' Incentives** November 20
Case: The Walt Disney Co. and Pixar Inc. [HBS #9-709-462]

Questions for Discussion
Which is greater: the value of Pixar and Disney in an exclusive relationship, or the sum of the value that each could create if they operated independently of one another or were allowed to form relationships with other companies? Why?

Assuming that Pixar and Disney are more valuable in an exclusive relationship, can that value be realized through a new contract? Or is common ownership required?

If Disney does acquire Pixar, how should Bob Iger and his team organize and manage the combined entity? What challenges do you foresee, and how would you meet them?

Class 10 **Lean Start-up Methodologies & Experimentation Capacity** November 22
Guest Lecturer: Christian Catalini, MIT Sloan

Anderson, Eric T. and Duncan Simester. 2011. "A Step-by-Step Guide to Smart Business Experiments." *Harvard Business Review,* **81**(9), pp. 96-103.

Kerr, William R., Nanda, Ramana, and Matthew Rhodes-Kropf. 2014. "Entrepreneurship as Experimentation." *Journal of Economic Perspectives,* **28**(3), pp. 25–48.

Questions for Discussion
Why is it so difficult for venture capital firms to identify future winners? And for a large firm to identify high-potential projects? Could you adopt the VC model within a large firm? And if so, how?
Under which conditions would you prefer performing an experiment over using historical data? What about the other way around?

Class 11 **Introduction to Design Thinking** November 27
Guest Lecturer: Matthew Kressy, MIT IDM

Brown, Tim. 2008. "Design Thinking." *Harvard Business Review*, **86**(6), pp. 84-92.

View the video of IDEO in action (see Mediasite link on Stellar), which demonstrates how they apply design thinking to develop a new product concept. (Some of you may have already seen the shopping cart video in other contexts. Please view it again. It is just 18 minutes.) Focus on the steps they execute in carrying out the design process and how they organize to do it. Even though this video does not show an actual design project for a client, it does illustrate how they operate and it will be the basis of our class discussion.

Class 12 **The Ins and Outs of Corporate Venture Capital** November 29
Guest Lecturer: Babak Movassaghi, formerly of flex.com

Lerner, Joshua. 2013. "Corporate Venturing." *Harvard Business Review,* **91**(10), pp. 86-94.

Class 13 **Managing R&D Project Portfolios** December 1
Case: Le Petit Chef [HBS #9-602-080]

Wheelwright, Steven C. and Kim B. Clark. 1992. "Creating Project Plans to Focus Product Development." *Harvard Business Review,* **70**(2), pp. 70-82.

Questions for Discussion
What should Brigitte propose? Specifically, which projects should she fund and why? How should she handle the executive meeting?

How would you change the portfolio process at Le Petit Chef?

Class 14 **Commercialization Strategies** December 4

Gans, Joshua and Stern, Scott. 2003. "The Product Market and the Market for Ideas: Commercialization Strategies for Technology Entrepreneurs." *Research Policy,* **32**(2), pp. 333-350.

Gans, Joshua, Murray, Fiona and Scott Stern. 2015. "Choosing an Entrepreneurial Strategy." Working Paper, MIT Sloan School of Management.

Questions for Discussion

Did your former company rely more on secrecy or IP to appropriate the knowledge generated by its innovations? What were the company's key complementary assets? Were they tightly held/controlled by your company, or fairly generic in nature?

Class 15 **Multi-sided Platforms & Platform Strategy. Part I: Coring.** December 6

Cusumano, Michael A. and Annabelle Gawer. 2008. "How Companies Become Platform Leaders." *Sloan Management Review,* **49**(2), pp. 28-35.

Class 16 **Multi-sided Platforms & Platform Strategy. Part II: Tipping.** December 11

Class 17 **Wrap-up** December 13