Syllabus

Seminar on Productive Knowledge: Sustaining Massively Multiplayer Innovation

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Governments and universities are pouring money into more 'practical' research – 'translational' medicine and 'evidence-based' policies in education, public health and economic development, for instance. But just translating or applying science rarely produces useful advances – and an inflexible adherence to the methods of natural or social scientists can do more harm than good. My pragmatic alternative is implicit in this syllabus (of a seminar I have been teaching since 2013) and in a companion Note on Productive Knowledge which provides the conceptual framework for the seminar.

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Seminar Syllabus:

Productive Knowledge: Sustaining Massively Multiplayer Innovation

This syllabus outlines the seminar's 'ends and means,' requirements and grading methodology. The schedule, daily assignments, and Appendix on the final paper follow.

A companion Note on Productive Knowledge provides the conceptual framework

Ends and Means.

The seminar aims to encourage and guide the development of innovative products and practices. We focus on advances, by and for the many, rather than elite, 'star-centric' breakthroughs. This 'multiplayer' innovation gives ample scope to individuals of widely varying talents, backgrounds, and interests to contribute and benefit.

We study eight foundational challenges of multiplayer innovation and several popular techniques used to address the challenges. (See Table 1).

Table 1: Foundational Challenges and Popular Techniques

Challenges:	Examples of Techniques:
Specify Goals (and sub-goals)	Objective and Key Results; Journey Maps
Conjecture	Positive Deviance; Root Cause Analysis
Evaluate and Test	Randomized Control Trials; Rapid Prototyping
Codify	Checklists; Best Practice Programs;
Communicate	Pyramid Principle; Social Media Marketing
Commit (to strategic goals and policies)	SWOT, Five-Force Frameworks
Order and Assign (tasks and authority)	Organizational Templates; Project Management
Motivate ("Incentivize")	Salary Surveys, Job Enrichment,

Case histories complement our examination of challenges and techniques. The case histories show that transformational advances require more than standardized techniques: Skills and judgment, and the human qualities of imagination, patience, perseverance and so on remain indispensable. The cases also highlight the romance of innovation. They remind us that great adventures require great risks and

difficulties and succeeding in what's safe and easy – or just financially rewarding -- is not always uplifting.

Requirements.

Pre-class submissions. Participants must submit (via an electronic Google form) responses to about 4-5 questions about the assigned readings by noon the day (i.e., on Mondays) before each class. I will compile and share the responses with seminar participants by the end of that day. You don't have to read the compilations, but you may find it helpful to skim them before class. Most of the assigned questions are open-ended, with just a few requiring yes or no answers.

Final Paper. Instead of a final exam, self-selected groups (of up to 3 students) will write a case history of a noteworthy, tried-and-tested, innovation. (An Appendix contains detailed guidelines, rules, the criteria I will use to evaluate the papers, and potential topics).

Schedule and Course Outline (Tentative).

Class #	Date	Topic
Introductory Case History		
1	18-Jan	Introductory Case history: Ulcer Treatments
Module I: Foundational Challenges		
2	25-Jan	Aim (Goal and Problem specification)
3	1-Feb	Conjecture
4	8-Feb	Evaluate and Test
5	15-Feb	Codify
6	1-Mar	Communicate
7	8-Mar	Commit (to Strategic Goals and Policies)
8	15-Mar	Order and Assign (tasks and authority)
9	29-Mar	Motivate ("Incentivize")
Module II: Case Histories		
10	5-Apr	Computed Tomography and Prozac
11	12-Apr	Personal Computers and Mobile Telephony
12	19-Apr	Remote ("Distance") Learning
13	26-Apr	t.b.a

Daily Assignments

Introductory Case History

Readings:

- Eradicating Helicobacter Pylori Infections to Treat Ulcers (Working Paper)
- *Note on Productive Knowledge* . (Appendix, optional but will be required for a subsequent class)
- The 'ends and means' of the seminar, requirements, grading methodology and schedule (described in the preceding pages of this syllabus)

Pre-class assignment (submit at ….).

1. What did you find the most significant or unexpected in each of the three sections of the case history? (Ten-word limit)

- [Most surprising/unexpected in 'Challenging Conventional Views (1976-1985)']
- [Most surprising/unexpected in 'Developing Tests and Treatments (1984-1993)']
- [Most surprising/unexpected in 'Gradual Adoption (1994-2005)']

Be prepared to explain why, and the relationships to the foundational challenges (e.g., goal setting, conjecture, evaluation and testing, codification, etc.) listed earlier and in the Note on Productive Knowledge.

2. I [would/would not] have supported mass-screening and treatment at the 2014 conference. (Be prepared to explain why in class.)

3. (Optional) What in the Note on Productive Knowledge did you find surprising, puzzling, or unconvincing? How does the case history support or contradict the multiplayer process described in the Note?

4. (Optional) What questions do you have about the seminar?

(It would be prudent, for this and subsequent assignments, to type out your responses in a Word document and then cut-and-paste into the Google form).

Module 1: Challenges and Techniques

This module examines eight critical challenges of multiplayer development and some of the techniques now widely used to address these challenges.

Aim (Goal and Problem Specification)

Any intentional ("premeditated") innovation requires targeting goals and sub-goals. And in principle choosing goals ("ends") first should make choices of means consistent with each other and across time. But this is easier said than done: choosing wisely poses great difficulty even for making personal choices while multiplayer development significantly expands the complexity of goal setting.

Readings/Podcasts:

• *Obliquity (John Kay podcast)*

• Blogpost on Objectives and Key Results (OKR) systems OR Video Presentation on Objective and Key Results (OKR) systems

• *The Balanced Scorecard* (Norton and Kaplan HBR)

• Goals Gone Wild (Bazerman et. al) (SKIM)

• *The Design of Everyday Things* (Don Norman) p. 218-221

• *Establishing Design Requirements* (Vincenti) (SKIM: DO NOT GET BOGGED DOWN IN THE DETAILS)

• *Indeterminate Goodness of the Economy* (Bhidé) (through the section, the Problem of Work)

• *Technology of Foolishness* (James March)

Pre-class assignment. (Submit at…)

1. What did you find most striking (i.e., surprising, puzzling, or useful) in the readings, videos, and podcasts? (Ten-word limit)

2. Write a short paragraph on **one** of the following questions: (Enter N/A for the questions you **don't answer).** But please think about ALL the questions – I WILL, in class, ask you about the questions you didn't answer.

• To what degree is the process outlined in Vincenti's "Establishing Design Requirements" reading applicable outside airplane design? For instance, in health care, the military, or business? OR How is it like or unlike the process described in the *Design of Everyday Things?*

• James March (Technology of Foolishness) raises the issue of choosing ends when you don't know what you could want – or will want – in the future. How is this problem different for organizations as opposed to individuals? What practical solutions do you see to this problem?

• What kinds of goals or targets are best pursued obliquely (as John Kay puts it) and which ones directly?

• What similarities and differences did you find between OKRs, the Balanced Scorecard, and Bazerman's *Goals Gone Wild?*

• The Bazerman and Bhidé readings raise the issue of the level of aggregation (or "subsidiarity") in choosing ends i.e., which ones should be chosen by individuals, which by employers, and which by societies and governments. What criteria can you think of for choosing this level? And what procedure would you suggest for making this choice?

3. What do the readings, videos, and podcasts suggest about goal setting in the organizations you have worked or in Fletcher's goals? (Ten-word limit).

Conjecture

Traditionally, inventions were believed to result from individual creativity and epiphanies that could not be systematized. Now, organizations try to systematize collective innovative effort, leaving less to unplanned individual epiphanies. At the same time, some experts and writers emphasize the continued importance of "intuitive" (rather than structured) problem solving.

Readings:

• *How strategists really think* (Analogical reasoning) (Gavetti and Rivkin)

• *Positive Deviant* (David Dorsey).

• *Design Thinking and Innovative Problem solving* (Datar and Bowler) **FOCUS ON p. 127-132**

• *Building a Best Practice Sharing Program that Works* (Lauren Keller Johnson)

• *Creative Benchmarking* (Dawn Iacobucci and Christie Nordhielm)

• Medicine, Management, and Mergers: An Interview with Merck's P. Roy Vagelos (Nancy A. Nichols) **FOCUS ON PAGES 106-108**

• *Drug Discovery 101* (Emily Burke)

• *The Five Why's* (Kanbanize)

• *What's your intuition?* (Gary Klein)

• *Blink* Wikipedia summary and Richard Posner review of *Blink*

Pre-class assignment. (Submit at …)

1. What in the readings did you find most puzzling, confusing, or unexpected (not facts you didn't know before, but unexpected in the sense of counter-intuitive or remarkable)? (Ten-word limit)

2. Pick any one systematic conjecture producing technique from: Analogical Reasoning; Positive Deviance; Design Thinking (Ideation); Best Practice/Benchmarking; Rational Drug Discovery; and, The Five Whys.

- For what kind of conjectures or situations is the technique best suited? (Ten-word limit)

- For what kind of conjectures or situations is the technique least suited? (Ten-word limit)

3 When and how can intuition serve as a substitute or complement to systematic techniques for producing conjectures? (no word limit)

4. What other reactions do you have that we could discuss in class? (optional)?

Evaluate and Test

Evaluations and tests serve many purposes such as choosing the base technology, modifying features, and troubleshooting and quality control. However, matching the ends to intended means can be challenging. Evaluations and tests can, pathologically, become an end onto themselves; the high cost of reliable tests can often preclude accurate comprehensive screening; and, regulators, the law, and societal norms, constrain the options.

Readings

- *Management Half-truth and Nonsense: How to Practice Evidence-Based Management*
- *Numerators Without Denominators: There Is No FDA for the Surgeon* (Spodick)
- *Drugs and Operations: Some Important Differences + Reply to Spodick* (Love)
- Assessing the Gold Standard — Lessons from the History of RCTs (Bothwell et. al)
- *Pros and Cons of Standardized Testing* (Columbia)
- *Why I don't Test Wine Blindly* (Altman)
- *The A/B Test: Inside the Technology That's Changing the Rules of Business* (Christian)
- *The Problem with Evidence-Based Policies* (Hausmann)
- *No-Nonsense Guide to Measuring Productivity* (Chew HBR)
- *Making Economics More Useful* (Bhidé) (SKIM The first three sections, through page 8)
- *The Air-Propeller Tests of W. F. Durand and E. P. Lesley* (Vincenti) SKIM

Plus, any TWO of:

- *Playing War Games to Win* (John Horn McKinsey Quarterly)
- *Note on Mammography (Bhidé, Datar, Stebbins)*
- *Learning and Quality Control* (Miranti)
- *Controlled Experiments on the Web* (Kohavi et al) OR • *Online Controlled Experiments and A/B tests* (Kohavi and Longbotham)
- *The Truth Wears Off* (Jonah Lehrer)
- Plato's *Allegory of the Cave*

Pre-class assignment. (Submit at …).

1. What did you find most surprising/puzzling/confusing/useful about the readings? (Ten-word limit)

2. Answer at least **one** of the following questions: (Short paragraph; Enter N/A for the questions you **don't answer)**

- What lessons do the examples of propeller testing and the No Nonsense Guide to Productivity measurement suggest beyond aircraft design and productivity measurement?
- To what degree could A/B testing – or some other technique -- address the problems of randomized control trials raised by Hausmann and Jack Love?
- What changes would you suggest to the FDA's testing procedures?
- How persuasive did you find Pfeffer and Sutton's critique of the "sorry state of the business idea marketplace?" How useful did you find the solutions they offer?
- When is standardized and blind testing most and least useful?

3. What other reactions do you have that we could discuss in class? (Ten-word limit)

Codify

Precise codification can reduce misunderstandings and mistakes but excessive codification can be dysfunctional. Choosing what to codify (ranging from a few key items to "everything possible") and how to do so (with options ranging from with complete precision or through broad principles) therefore has great importance.

Readings/Podcasts:

Checklists:

• Readings compiled into single pdf (comprising: Perspectives in quality: designing the WHO Surgical Safety; Checklist Atul Gawande's Checklist for Surgery Success; Atul Gawande interviewed by HBR's Katherine Bell; Justin Fox Blogpost on Gawande book; Ten Steps to Preventing Infection in Hospitals; Wall Street Journal Interview with Dr. Peter Pronovost; and Wall Street Journal Review of The Checklist Manifesto).

Legal Codes and Rules:

• *Fletcher Student Handbook* (Focus on the Academic Policies and Procedures, and Working with Others Policies)

• *United States Bill of rights* (Wikipedia, downloaded December 16, 2021)

Precision and Completeness of Codification:

• *Getting it Right the Second Time* (Szulanski and Winter)

• *Judgement Deficit* (Bhide) OR podcast at https://hbr.org/2010/09/the-big-idea-the-judgment-deficit OR *Formulaic Transparency* (Bhide)

Pre-class assignment. (Submit at …)

1. What did you find most surprising/puzzling/confusing/useful about the readings and podcasts? (Ten-word limit)

2. Write a short para answering **one** of the following questions: (Enter N/A for the questions you **don't** answer)

- What kinds of tasks are checklists best and least suited for? OR What do you most agree/disagree with in Philip Howard's critique of Gawande's book?
- What can replace or reduce the need for codification and standardization?
- When is loose or ambiguous codification better than precise, unambiguous codification?
- When is locally designed codification better than global codification?
- What do you most agree/disagree with in the Szulanski and Winter article)?
- When is discretionary enforcement better than non-discretionary enforcement?

3. What is the most significant change in 'Academic Policies and Procedures' or 'Working With Others Policies' would you would propose in the Student Handbook? (Ten-word limit; No significant change is an option)

4. Other reactions/suggested topics for class discussion (Optional)

Communicate

Techniques for effective communication are ancient, going back to at least the Greek rules of rhetoric. Now we have a profusion of techniques that cover many purposes and technologies, ranging from person-to-person communications, written reports, presentations, recorded videos and podcasts, and social media.

Readings, podcasts, and videos:

Principles of Persuasion:

• Rhetoric Bragg et. al podcast posted at http://www.bbc.co.uk/programmes/p004y263

• Harnessing the Science of Persuasion -- Cialdini

• *20 Simple Steps to the Perfect Persuasive Message* (blog post)

Visual representation of data and arguments:

• Gene Zelazny: Make Your Presentations Compelling -- interview with author of Say It With Charts and its sequel Say It With Presentations and Zelazny remarks

•Tufte reader's guide – based on of Edward Tufte's Visual Display of Quantitative Information

• PowerPoint Debate -- compilation of observations by Parks, Tufte and Zelazny

Written Communications:

• *How to Structure What You Write* (Bierck, on Minto's Pyramid Principle) HBR

• Minto Pyramid Presentation (slideshare download)

• *How to write a Memo or Report* (Williams, also based on Pyramid Principle) HBR

• *Vonnegut on Style and Shapes of Stories* (Maria Popova based on Vonnegut's presentation and essay included in How to Use the Power of the Printed Word anthology)

Making Presentations and Speeches

• *The Knockout Presentation* – HBR

• *For Presidential Hopefuls, Simple language resonates* (Boston Globe article)

• Nancy Duarte's 5 rules for presentations and a TedX East talk (video)

• Steve Job's presentations launching the iPod and iPhone (video)

Pre-class assignment. (Submit at…).

1. What did you find most striking or useful in the readings, videos, and podcasts? (Ten-word limit)

2. I [agree/disagree] with Gene Zelazny's argument about PowerPoint debate, (Be prepared to explain why in class)

3. I [agree/disagree] with Plato's view of rhetoric. (Be prepared to explain why in class)

4. What lessons did you derive from the Steve Jobs presentations? What noteworthy choices (e.g., about content, structure, delivery, visual aids, etc.) did he make? To what degree do his presentations confirm, extend, or contradict the other assigned materials? (Short para)

Commit (to 'strategic' goals and policies)

Difficult to reverse commitments to strategic goals and policies helps align choices "vertically" (so that the more tactical 'lower level' choices support the 'higher level' commitments); "horizontally" (so that choices at the same level support each other); and, "temporally" (so that later choices build on earlier choices.) Military planners pioneered doctrines and techniques – and established staff -- for making strategic choices. Now such doctrines, techniques and staff have become commonplace in large business and non-profit organizations.

Required Readings:

- *Competition and Business Strategy in Historical Perspective* (Ghemawat)
- *Gaining Advantage over competitors* (McKinsey Quarterly compilation)
- *What is Disruptive Innovation*? (Christenson, Raynor and McDonald)
- *Clay Christensen's theories are great for entrepreneurs, but not executives* (Bhidé and Ghemawat)
- *The Development of Discounted Cash Flow Techniques in U.S. Industry* (Dulman)
- *Operations Research vis-à-vis Management* (Thomas) (**SKIM)**
- *Military Strategy: Encyclopedia Britannica Entry* (Cohen)
- *Strategy Needs Creativity* (Brandenburger)
- *Critical Tasks* (Chapter 11 in Bhidé's Origin and Evolution of New Businesses)
- Sun Tzu podcast and/or The Art of War

Pre-class assignment. (Submit at …)

1. What ideas in the readings and podcasts did you find to be most striking or useful? (10-word limit)

2. What relationship do you see Discounted Cash Flow (Dulman) and business strategy techniques? OR What similarities and differences do you see in the development and substance of military and business strategy techniques?

3. Why didn't Operations Research become as popular or as widely used (by managers) as Porter's Five Forces, Christenson's Disruptive Technologies, and Discounted Cash Flows (DCF)?

Please think about the 'individual' appeal and utility of the Five Forces, Disruptive Technology, and DCF models and not just why DCF didn't take off!

4. What other questions do the readings raise that we should discuss in class? (10-word limit)

Order and Assign (Tasks and Authority)

Organizing multiplayer development requires more than a simple division of labor used in classic factory production or routine office work. Numerous interdependent tasks and activities must be ordered, responsibility for timely performance distributed, and the necessary authority given to those responsible. In this session we several techniques and templates that have emerged to support this ordering and assignment.

Readings:

• *Extracts from Strategy and Structure Book Review* (Krooss)

• *Spread of Multi-divisional Form* (Fligstein) **Focus on highlighted material**

• *Strategy followed structure: management consulting and the creation of a market for ''strategy,'' 1950–2000* (McKenna) **Focus on highlighted material, mainly on p. 158-161**

• *Diversity in Diversity* (Scranton) **Focus on highlighted material**

• *The Halfway House: Coordination through Organizational Authority* (Amar Bhidé) **p. 46-51**

• *A Brief History of Lean* (Lean Enterprise Institute)

• *Six Sigma and Project Management* (Stauffer)

• *Encyclopedia Britannica entry on the History of the Organization of Work.* **Only highlighted material**

• *Business Process Reengineering* (Wikipedia March 20, 2019, download) **SKIM**

• *Venturesome Consumption* (Bhidé). **Only highlighted material SKIM**

• *Reengineering Work* (Hammer)

• *Excerpts from Encyclopedia Britannica entry on R&D.* **Only highlighted material**

• *AMA Handbook of Project Management* (4th Edition) **SKIM Chapters 1, 2**

•*Note on Project Management* (Svann). **Highlighted material on pages 1 and 2**

• *The Project Economy Has Arrived (Nieto-Rodriguez HBR) OR audio*

Pre-class assignment. (Submit at …)

We can (roughly) classify techniques discussed in the readings into the following categories: 1) Templates for structuring organizational sub-units. 2) Protocols to reform organizational structures and processes ("lean", "business process reengineering," six sigma) and 3) Project management protocols.

1. How might have the techniques you read about affected – and been affected by – the increased democratization ('multi-player development') and digitization of innovation? (*Brief paragraph)*

OR

What contrasts (or similarities) in the techniques and/or in their development and adoption do you find most striking? (*Brief paragraph)*

2. What did you find most useful the readings? (10 words or less)

3. What other questions do the readings raise that we should discuss in class? (10-word limit)

Motivate ("Incentivize")

Assembly line production spurred a change from piece-work payment to paying high ("efficiency") wages for tasks specified by time-and-motion experts and monitored by foremen. The subsequent shift to collaborative "knowledge work" on and off the factory floor has spurred a search for incentives and controls that promote teamwork without stifling individual initiative.

Readings:

• *Miscellaneous incentivization readings* (QUICK SKIM)

• *Did Henry Ford Pay Efficiency Wages?* (Raff and Summers)

• *A Theory of Human Motivation* (Maslow)

• *Nature of Man* (Jensen and Meckling) FOCUS on 'The Psychological model of Human Behavior' that starts on p. 14

• *'Lockstep' falls out of step with modern law firms* (*Financial Times).*

• *Handelsbanken 2002*

Pre-class assignment. (Submit at …):

1. What did you find most striking in the readings or videos? (10 words or less)

2.What "new takeaway" could an organization you are familiar with have applied, and in what specific situations? (Short paragraph)

You don't need to describe the specific situations where the takeaways could have been applied in your write up, but please be prepared to describe them in class.

Also, the "new takeaways" don't have to be ideas that you had literally never thought about, or which are completely non-obvious; they can be things that that you had not given serious thought to and ideas that are obvious once pointed out. And, the takeaways need not be explicit in the readings but merely prompted by the readings.

3. Should – and can – other banks follow Handelsbanken's "no bonus policy"? (Y/N)

4. I [would/would not] want to work for a professional services firm with 'lockstep' compensation? (Y/N)

5. Other (optional) observations.

Module 2: Case Histories of transformational advances

This module examines the development of artifacts, including devices, technologies, and organizations, whose designs and use have had transformational consequences. The examination should illuminate the overall processes of multiplayer development as well as of the functional challenges studied in the first module.

Computed Tomography (CTs) and Prozac

CTs and Prozac were more rapidly adopted in the US than antibiotic treatments for ulcers (discussed in the first session.) But rapid adoption also created controversies.

Readings:

Medical advances (HBS Working Papers)

• *Development of Computed Tomography*

• *SSRIs and Non-SSRIs ('Prozac')*

• *Eradicating Helicobacter Pylori Infections to Treat Ulcers* (discussed in the first class)

Preparation Questions (to think about for the pre-class submission and for the class discussion)

• What were the main differences in the development and adoption of CTs, Prozac, and Ulcer treatments?

• What might account for these differences?

Think about the rates and geographic variations in adoption and innovation, the effects of competition and regulation, and the foundational challenges discussed in Module 1 of the seminar.

Pre-class assignment. (Submit at …).

1. What did you find most striking in the CT and Prozac case histories? (Ten-word limit)

2. How do the case histories support, extend, qualify, or contradict the description of democratized ('multiplayer') innovation contained in the Note on Productive Knowledge? (Short para)

OR

How do the case histories support, extend, qualify, or contradict what we discussed or read about any of the functional challenges of innovation (goal setting, conjecture, etc.) in the first module of the seminar? (Short para).

3. As the head of GE's medical products division in 1997, I [would/would not} you favor reinvesting all the cash CTs generate in the CT business (instead of investing some CT generated cash in other medical products).

Personal Computers and Mobile Telephones

Personal computers and mobile phones have been transformational – and continue to advance -- in ways that were initially inconceivable.

Readings:

(Please focus on the story: the plot, the characters, and organizations rather than the author's take or analysis and skim as indicated).

• *External Economies and Economic Progress: The Case of the Microcomputer Industry* (Langlois).

• "*Not Only Microsoft: The Maturing of the Personal Computer Software Industry, 1982-1995*" (Campbell-Kelly) (**SKIM)**

• "*History of Personal Computers."* (Wikipedia, Downloaded December 14, 2021)

• "*History of Mobile Phones"* (Wikipedia, Downloaded January 4, 2022)

• "*A Brief History of Mobile Telephony"* (Jessop)

Optional videos:

• Triumph of the Nerds (find on YouTube)

• The Origins and Impact of VisiCalc

Preparation Questions (to think about for the pre-class submission and for the class discussion)

Why was the adoption of PCs and mobile phones more globalized than their development?

Why wasn't the Japanese lead in consumer electronics maintained in personal computers and mobile telephones?

Why did PCs provide more opportunities for startups than mobile telephony?

What do the case histories of PCs and mobile telephones add to your understanding of multiplayer innovation?

Pre-class assignment. (Submit at …)

Based on your readings **and** other knowledge:

1. What do you find most striking about the development of personal computers? (Ten-word limit)

2. What do you find most striking about the development of mobile telephones? (Ten-word limit)

3. What contrasts between the development of mobile telephones, personal computers, CTs, and Prozac do you find striking and why? (Short para)

OR

What further questions should we discuss in class and why? (Short para)

Remote ("Distance") Learning

Remote learning both enables innovation and is extended by technological advances, particularly in communication technologies.

Readings:

• *Worldwide Journey Through Distance Education*

• *Teaching Online at Yale*

• *2U Wikipedia Entry*

• *Companies are Profiting off on-line learning (Atlantic)*

• *Khan Academy Wikipedia Entry*

• *The Future of College (Atlantic article on Minerva)*

• Fletcher Announcement of Master of Global Administration

• *Blogpost 50-of-universities-will-be-bankrupt-in-10-15-years*

Preparation Questions (to think about for the pre-class submission and for the class discussion)

1 What encourages or hinders innovations in remote learning?

2. What kind of in-person learning is most easily replaced by remote learning? By combinations of in-person and remote?

3. How does remote learning affect the relationship between for-and non-profit providers?

4. What similarities do you see between "work from home" and remote learning?

Pre-class assignment. (Submit at …)

Based on your readings **and** other knowledge:

1. What do you find most striking about the development of remote leaning? (Ten-word limit)

2. In 2018, I would have [**favored/opposed**] Fletcher's launch of the Masters in Global Administration program because:

- Enter reason 1 (Ten-word limit)
- Enter reason 2 (Ten-word limit)
- Enter reason 3 (Ten-word limit)

3. What else would you most like to discuss in class? (Ten-word limit)

Appendix: Final Paper: Guidelines, Rules, Evaluation Criteria, and Possible topics

Instead of a final exam, you will form self-selected groups (of up to 3 students) to write papers on the development of a noteworthy innovation that has proven its practical value. The innovation can include a device, technology, system, or organizational template from any field. Expanded or updated versions of techniques and case histories covered in the seminar are also acceptable. (Possible topics are listed at the end of this appendix)

The innovation does not have to be faultless – nearly all important innovations have some limitations. You can also write about advances that had a significant impact but then declined. Do **not** however write about 'promising' initiatives that have not proceeded beyond the conceptual or experimental stage, even if they have received a lot of money and publicity. For instance, if you write about a new drug or device, it should have already entered clinical use. Also, avoid writing about specific companies or organizations unless (like the Mayo Clinic or McKinsey & Co.) they created a 'template' that was broadly adopted. You may however write about a technology that one company came to dominate (e.g., Google in on-line search, or Amazon in on-line retail) provided you don't focus on what just the dominant company did.)

You can also write an integrative essay on any of the challenges (goal setting, conjecture etc.) that covers several techniques, their history, strength and weaknesses and so on.

Your paper should contain three segments which:

Describe the basic story of the advance – or in the case of an integrative essay, several advances. The story would include, the technical difficulties, earlier steppingstones, and the individuals and organizations who made it happen. My case-histories on medical innovation provide a model, but you don't have to follow it. (70% of credit)

Analyze the facts you describe. This segment should include insights and explanations about how and why the advance progressed, the contributions and missteps of the players, and so on. (20% of credit). Note that my "model" case histories DO NOT include this analysis.

Reflect upon the broad ideas illustrated by the specific story. What general principles or rules of thumb did the story of the advance reinforce in your mind, lead you to modify, or cause you to reject? What did you learn that will influence your career in the next five years? (10% of credit)

The papers should be about 5,000 to 7,500 words long (10- 15 single spaced pages, plus appendices) with the length of each segment roughly reflecting the credit assigned.

Papers MUST be properly "sourced"/annotated. A general "bibliography" will not be adequate – the reader must be told where all facts or quotes came from. I would recommend learning to use the open-source package, Zotero.

"Good" papers will also: 1) explain the dynamics of the advance -- how one decision or event led to another or precluded some other option. 2) Avoid clichés and platitudes -- focusing instead on surprises and sharp 'do's and 'don'ts that might not otherwise occur to the reader. 3) Offer conditional ('if-then') propositions rather than sweeping, generalized claims. 4) Support propositions with evidence and reason. 5) Show that you learned something from the course by for example using comparisons with the cases discussed or by supporting, challenging, or modifying ideas in the

readings. 6) Use clear language and an easy-to-follow structure. Simply put, a good paper will have value many years from now and you will remember it with pride!

Potential paper topics

Techniques included in seminar (e.g., Human Centered Design, 'agile' or traditional project management, Objectives and Key Result (OKR) systems, Balanced Scorecards, A/B tests, Five Whys/Fishbone analyses, Six Sigma, benchmarking and best practice sharing, rational drug discovery, War gaming, "lean" processes, checklists, rational drug discovery)

Integrative essay on a multiplayer challenge (e.g., Goal setting, Conjecture, Evaluation and testing etc.)

Case histories included in seminar (e.g., personal computers, mobile phones, Khan Academy, MOOCs)

Techniques not covered in seminar

Customer Relationship Management
Machine Learning/Big Data/Artificial Intelligence
Simulations (including Agent Based Modeling) and Data Visualization
Professional (non-entertainment) applications of Storytelling
Professional (non-entertainment) applications of social media

Transformational advances and organizations not covered in the seminar

E-commerce platforms
Massively multiplayer and video games
Augmented/virtual reality devices
Social Networks
Movie and Music Streaming
Container shipping
mRna vaccines
5 G Networks
Mayo and/or Cleveland Clinics
Montessori schools
World Wide Web
TED conferences
Updates to Bhidé/Datar case histories of transformational medical advances