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Course Syllabus:

Lessons from Transformational Advances

The course uses case histories of transformational advances to encourage and guide innovators in health care and other industries. After describing these 'ends and means,' this Syllabus summarizes a [simple framework](#) we use in the course, the required [pre-class submissions](#), [final paper](#), and [grading methodology](#), followed by a provisional course [schedule](#) and [daily assignments](#).

Ends and Means.

Popular media routinely tout imminent breakthroughs that often fizzle. We examine advances that indisputably changed medical practice in the last quarter of the 20th century. The case histories suggest that protracted, *multiplayer* innovations – not solitary breakthroughs – produce transformational results. Yet venturesome individuals who don't follow the crowd remain crucial.

Engaging stories make the vast number of facts presented in the case histories memorable. But the course treats learning new facts mainly as a valuable byproduct. Instead, we rely on the case histories in two more subtle ways, namely:

Developing skills and judgment, particularly in recognizing opportunities and anticipating problems, adapting ideas from other domains, evaluating alternatives, etc. Learning by doing – or [watching](#) – is often crucial for developing 'skills of the hand,' such as changing a car tire. But for many 'skills of the mind and heart,' learning from past instances is more practical and feasible. For example, studying historical wars and battles has long been an essential part of training military leaders. Moreover, the skills and judgment emphasized go beyond particular techniques (which may become obsolete) and support more than just medical innovations.

Sharpening goals and aspirations. The case histories include stirring stories that showcase the romance of human progress. But they do not praise or preach. They include controversies about the overuse of antidepressants and expensive procedures. Great adventures, they remind us, require great risks and difficulties, and succeeding in what is safe and easy – or just financially rewarding -- is not always uplifting. In the coronary bypass case, for example, we encounter a German researcher who fails to "meet the scientific expectations" of his boss, loses his job, switches from surgery to urology, joins the military, and becomes a prisoner of war. Eventually, he gets a Nobel prize but can never secure a professorship because he had not finished his PhD. The boss of the surgeon who performs the first successful bypass forbids him from doing another. An Argentinian who then does many bypasses at the Cleveland Clinic and comes to be known as the 'father' of the surgery ends up committing suicide after the institute he starts in his homeland cannot pay its bills.

Amar Bhidé, Professor of Health Policy and Management, prepared this syllabus. It includes links to many of the teaching materials. Bhidé welcomes emails at <amar AT bhide.net> from faculty members would like further help in teaching this course, which can be taught to wide range of audiences.

While the setbacks and failures described may discourage some from attempting great leaps, the case histories should nevertheless inspire many prudent initiatives. Unlike hagiographies of larger-than-life pioneers, the stories have 'ensemble' casts. Stars appear but don't dominate. Rather, the stories show how innovation accommodates a wide range of talents and temperaments. We will see how careful contributions that are not individually revolutionary or risky can, added up, make a significant difference. Therefore, the course should help shape and stimulate your aspirations -- but not past your breaking points.

The course's emphasis on skills, aspirations, and stories reflects my experience of teaching and researching entrepreneurship. Conversations with former students in my entrepreneurship classes suggest that startups' emotional and visceral aspects and stories leave a more lasting impression than the analytical aspects. When I surveyed graduates of Harvard's MBA program I asked what they wished they had better learned. Most responses related to skill development (learning to sell, for example) and exposure to the stresses of starting a business.¹ Similarly, my research on high-growth companies suggests that a startup's success depends more on the founder's skill and determination than on creative business ideas and models.²

Framework

A [Note on Productive Knowledge](#) provides a "simple walking stick"³ for analyzing the case histories and discussing advances beyond health care. It treats innovation as a multiplayer process undertaken by and for the many, rather than as an elite, 'star-centric' activity. And the Note classifies the distinctive challenges of multiplayer innovation into functions such as goal setting, evaluation and testing, codification, and communication. Like tags and playlists in a music collection, the categories can help order and retrieve observations and inferences drawn from the case histories. The categories, or some version thereof, can also support life-long learning from and "[thinking in cases](#)."⁴

The categorization, which (like the skills and attitudes targeted in this course) is designed for more than just medical innovation, will also help broaden the class discussions. For instance, we will discuss the generic challenges of codification along with the Prozac case history. Additional materials and preparation questions (see the [daily assignments](#) section of this syllabus) will stimulate these broader discussions, and an extensive optional reading list will help you dig more deeply if you wish.

Pre-class submissions.

The case histories contain specific questions after each section and at the end. Students are required to enter very brief answers (less than ten words) to the questions on an online form by **1 am** of the day of each class. I will create slides from the submissions, which I will use to start and continue the class discussion.

The submissions require less than an hour of additional work over the term.

My experience suggests that this modest additional effort provides attractive returns, including: 1) Practice in confronting the uncertainties that innovators typically face. 2) Classes with fewer superficial comments because students are better prepared and, more importantly, have a point of view. 3) Broader participation: the instructor can draw in the quieter students when the instructor has prior knowledge of their perspective on the case.

If you do not submit a response, I will assume you have not prepared the material. However, if you have a technical problem, do not waste too much time trying to submit your response. Just email me that you tried but could not; I will take your word. Likewise, if you cannot submit because of a personal emergency, please let me know.

(The [daily assignments](#) in this syllabus include questions raised by the case histories that will provide the basis for discussions about the broad ‘takeaways.’ These questions do not require any submissions, however.)

Final Paper.

Instead of a final exam, self-selected groups (of up to 3 students) will write papers on a noteworthy (medical or non-medical) advance that has already proven its practical value. Like the final papers written for my entrepreneurship class (see the compilation *Tales from Successful Entrepreneurs*), the papers should include a description of what happened (the “story”); an analysis of specific choices; and general reflections and takeaways. ([An Appendix](#) contains detailed guidelines, rules, and the criteria I will use to evaluate the papers).

*Schedule and Course Outline (Tentative).*Lessons from Transformational Advances

#	Dates	Case Histories*	Additional discussions*
<u>Comprehensive/ Introductory</u>			
1	9/04/2024	Ulcer Treatments	Overview
2	9/11/2024	HIV/AIDS	Common Multiplayer Tasks
<u>Drugs</u>			
3	9/18/2024	Tamoxifen	Goal Setting
4	9/25/2024	Cephalosporins	Conjecture
5	10/2/2024	Prozac	Codification
<u>Procedures</u>			
6	10/09/2024	Mammography	Evaluation and Testing
7	10/16/2024	Laparoscopy	Communication
8	10/23/2024	Endoscopy	Strategic Commitment
9	10/30/2024	CABG	Responsibility And Authority
<u>Devices</u>			
10	11/06/2024	CT	Incentives
11	11/13/2021	MRI Ultrasound	Scientific Research and Industrialized Development 'Disruptive' Innovation
<u>Promising Contemporary</u>			
12	11/20/2024	CAR-T cell Therapy	Paradigmatic Beliefs
13	12/04/2024	Fecal Transplants	Demand-side catalysts
<u>Valedictory</u>			
14	12/11/2024	Cicely Saunders/Hospices	Institutional Innovation

* See [Daily Assignments](#) (in the next section) for Required Readings and links to the required pre-class submissions.

Daily Assignments

Antibiotic Treatments for Ulcers (+ Overview)

The development of a simple cure for ulcers introduces several themes and ideas examined in the course. The dramatic story (covering several decades in just ten pages of main text) describes how an improbable hypothesis virtually eliminated an ancient, widespread disease.

An accompanying reading ('Traditions and Rules.') provides a concise 'history of Western medicine' and a summary of current institutional arrangements (e.g., how the US government finances research and regulates new tests and treatments). This history and summary will provide helpful information and context for the rest of the course and a provocative hypothesis about the challenges of medical innovation.

Readings:

- [Antibiotic Treatment for Ulcers—Eradicating H-Pylori Infections](#) (HBS Working Paper 20-006)
- [Traditions and Rules that Limit Medical Innovation](#). (Bhidé Critical Review)
- *First three pages of this Syllabus*

Pre-class submission (Required).

This case history contains questions after each section and at the end of the case history. Please enter **very brief** answers (less than ten words) to the questions here: <https://forms.gle/v7kkpX2tajA51994A>

Broader Questions (to think about in preparing for class)

What did you find most surprising about the case history and the *Traditions and Rules* readings (beyond just facts you might not have known about)?

What role did scientific research and understanding play in developing ulcer treatments?

Does the H-Pylori case history support the *Traditions and Rules* article (written before the case history was completed)? What would you change in the article?

Controlling the HIV-AIDS Pandemic (+ Multiplayer Tasks)

The HIV-AIDS case history provides a second and more detailed introduction to the power of multiplayer innovation. The accompanying Note on Productive Knowledge provides a framework that will help guide our analysis of the case histories that we discuss in the rest of this course.

Readings:

- [HIV Tests and AIDS Treatments—Containing a Fearsome Pandemic](#) (HBS Working Paper 20-007)
- [Note on Productive Knowledge](#). (Appendix, optional but will be required for a subsequent class)

Pre-class submission.

Submit answers to questions contained in the case history here: <https://forms.gle/xnjViGGppBNB2Vw8A>.

Broader Questions (to think about in preparing for class)

What could have been done differently to accelerate the rollback of the AIDS pandemic?

How did the goals, objectives, and problem specifications -- the “ends” -- of the different players affect what they did -- their “means”? How would you evaluate their performance?

What “exceptional” rules or changes adopted by the FDA should the agency have continued?

What general lessons about containing pandemics does the HIV/AIDS case history suggest?

Tamoxifen (+ Goal Setting)

The case history of Tamoxifen is the first of three 'drug' case histories in this course. It describes a "gold standard" breast cancer therapy that emerged from a failed effort to develop a contraceptive. The accompanying readings support 'sidebar' discussions on 'goal-setting' – a pivotal challenge of 'multiplayer' innovation.

Required Readings/videos/Podcasts:

- [Tamoxifen – Reducing Breast Cancer Risks](#) (HBS Working Paper 20-134). (The main text is just seven pages, so please use the “extra time” to read the exhibits carefully.)
- [Obliquity \(John Kay TedX talk on indirect goals and objectives\)](#) OR [blogpost](#) (on the same topic)
- [Blogpost on Objectives and Key Results \(OKR\) systems](#) OR [Video Presentation on Objective and Key Results \(OKR\) systems](#)
- Annotated 'Technology of Foolishness' (James March)

Pre-class submission

Answer questions contained in the case history here: <https://forms.gle/BMzvmKUkdCXSrGPN8>

Broader Questions (to think about in preparing for class)

Evaluate the choices ICI's top managers made. What were their implicit or explicit goals? What were their “conjectures” or “hypotheses” -- colloquially put “What were they thinking!?”

What similarities and differences do you see in Doerr's OKRs, Kay's Obliquity, and March's 'Technology of Foolishness'?

What have you learned in your other courses (and from your experiences) on goal setting and problem specification?

Optional Readings/videos/Podcasts:

Listed under 'Goal Setting and Problem Specification' in the the [extended reading list](#).

Cephalosporins (+ Conjecture)

The development of Cephalosporins – the most widely used drugs to control infections in hospitals – shows the unusual nature of the supply and demand for new antibiotics. The case history also illustrates some common pathways for developing ‘conjectures’ – hypotheses about promising treatments.

Readings/Podcasts:

- *Cephalosporins – Fighting Hospital Infections* (HBS Working Paper 20-133)
- Excerpts from ‘In Our Time’ podcast on penicillin (first 37 minutes)
- *How Strategists Really Think* (HBR, Gavetti and Rivkin’s HBR article on Analogical reasoning)

Pre-class submission.

Answer questions contained in the case history here: <https://forms.gle/jNGcr8EiX7CgTdVa7>

Broader Questions (to think about in preparing for class)

How has the demand and supply for antibiotics evolved over the last 100 years?

Who has the most/least incentive and capacity to adopt novel antibiotics (hospital doctors, Primary Care Physicians/General Practitioners, managed care organizations, others?)

Do large pharmaceutical companies have the incentive and capacity to continue to develop new antibiotics? If not, what opportunities does this provide small drug developers?

To what degree do the methods used to develop antibiotics – and Beatson’s conjectures in the Tamoxifen case --reflect “analogical” reasoning (discussed in the Gavetti and Rivkin HBR article)?

Optional Readings:

- *Tales From Successful Entrepreneurs* (396-050). Browse/skim for ideas about your final paper and, if you are interested in entrepreneurship, for light reading!
- Materials listed under ‘Conjecture’ in the [extended reading list](#).

Prozac (+ Codification)

Prozac, one of the most widely used -- and controversial -- drugs ever developed, helps us think about the conditions that enable "blockbusters." The drug's popularity also illustrates the subtle role of 'codification' in the diffusion of medical treatments and practices.

Readings:

- *Prozac—Controversial Blockbuster* (HBS Working Paper 20-135)
- [Emergence of Clinical Practice Guidelines](#) (Extracts from Weisz et al.)

Pre-class submission

Answer questions contained in the case history here: <https://forms.gle/NPTxyccMwe5psjHV7>

Broader Questions (to think about in preparing for class)

What does Prozac's case history suggest about the conditions and choices that produce "blockbuster drugs"?

Evaluate Lilly's development and commercialization of Prozac, especially compared to what ICI did with Tamoxifen. What aspects of its model remain relevant?

What general lessons do the emergence of clinical practice guidelines in the Weisz reading, the Prozac case history, and the other case histories we have discussed suggest? How do these lessons apply to fields outside health care?

What have you learned about codifying knowledge and practices in your other courses (and from your experiences)?

Optional Readings/videos/Podcasts:

- Getting it Right the Second Time (Szulanski and Winter HBR)
- Judgement Deficit (Bhidé HBR) OR podcast at <https://hbr.org/2010/09/the-big-idea-the-judgment-deficit>
- *The Art of Evidence-Based Medicine* (Christopher Worsham and Anupam B. Jena HBR Reprint H04RH1 Published on HBR.ORG on JANUARY 30, 2019)
- Other materials listed under 'Codification' in the [extended reading list](#).

Mammography (+Evaluation and Testing)

Mammography is the first of three classes on ‘procedures’ – although, as with most procedures, its development included the development of complementary devices. The development of mammography also exemplifies the challenges of ‘testing and evaluation.’ These challenges, which inevitably arise in any innovation, are especially controversial in health care.

Readings:

- *Mammography—Early Detection, Precise Diagnoses* (HBS Working Paper 20-002)
- *Assessing the Gold Standard — Lessons from the History of RCTs* (Bothwell et al.)
- *Making Economics More Useful* (Bhidé 2020) (**SKIM** Section 1 and conclusion only)

Pre-class submission.

Answer questions contained in the case history here: <https://forms.gle/DrSodSddd5gvPXm99>

Broader Questions (to think about in preparing for class)

What does the mammography case history (and the earlier case histories, especially on HIV/AIDS) suggest about the similarities and differences in advances in mass screening and drug development?

Evaluate the choices made by regulatory and public health choices about mammography in the US, Europe, and Japan.

How should you evaluate a new test or evaluation procedure? What criteria (besides accuracy and cost) might you apply? What deficiencies or tradeoffs would you accept? How would you check the performance of the test against your criteria?

What distinct features do you see in testing hypotheses (‘conjectures’) in health care vis-à-vis other domains such as business and engineering?

Optional Readings/videos/Podcasts:

William Bynum’s “Medicine in the Hospital” (p. 43-67 in *The History of Medicine: A Very Short Introduction*) is HIGHLY RECOMMENDED. Others on ‘Evaluation and Testing’ in the [extended reading list](#) are also worthwhile.

Laparoscopy (+ Communication)

The development of laparoscopy (and its other ‘minimally invasive’ variants) helped transform general surgery. Unlike some other advances in the course, it did not require or produce Nobel-prize-winning scientific research. Its development, however, does include many features and challenges of protracted, multiplayer development, including ‘communication,’ especially with potential end-users (i.e., patients).

Required Readings and videos:

- *Laparoscopy—Minimally Invasive Surgery* (HBS Working Paper 20-008)
- Steve Jobs’s presentations launching the iPod and iPhone (videos).

Pre-class submission.

Answer questions contained in the case history here: <https://forms.gle/oyfHGJTbGGVb2o8y7h>

Broader Questions (to think about in preparing for class)

What does the case history suggest about the catalysts and barriers that innovators face in developing and propagating a new surgical procedure? How are these different from the development and marketing of new drugs?

The case suggests that ‘traditional’ mass media helped popularize laparoscopy. How might social media and other new communication technologies affect the dissemination of a similar procedure now? What kinds of procedures would you expect to be most affected?

What might innovators from other industries (including health care) adapt from the communication strategies of companies like Apple?

How might the adoption of laparoscopy be different in middle- and low-income countries?

Optional Readings/videos/Podcasts:

- Listed under ‘Communications’ in the [extended reading list](#).
- Part III (on ‘Imaginative Discourse’) in *Uncertainty and Enterprise*. (Bhidé 2025)

Endoscopy (+ Strategic Commitment)

A physics-based invention started the transformation of an age-old diagnostic procedure, while its subsequent development combined new clinical practices and technological advances (but not much cutting-edge 'science.') Physician innovators led the development and diffusion of the practices. In contrast, businesses made important 'strategic commitments' to new technologies, many adapted from outside health care.

Readings:

- *Gastrointestinal Endoscopy—Without Cutting In* (HBS Working Paper 20-005).

(The main text is just 11 pages, and the exhibits do not require detailed analysis)

- *Competition and Business Strategy in Historical Perspective* (Ghemawat -- Business History Review 76 (Spring 2002): 37-74. **SKIM**)

- *Gaining Advantage over competitors* (McKinsey Quarterly compilation) **SKIM**

Pre-class submission.

Answer questions contained in the case history here:<https://forms.gle/P6Cih5VbW4Gw8ada6>

Broader Questions (to think about in preparing for class)

What similarities and differences do you see in the development of laparoscopy and endoscopy?

How did the “attractiveness” (as evaluated by strategic frameworks) of the endoscopy market change over time? In what way would such an evaluation have helped industry entrants and participants?

When and how can standard business strategy techniques help innovators? When and how might they not be particularly useful or even harmful?

Optional Readings/videos/Podcasts:

Listed under ‘Strategic Commitment’ in the [extended reading list](#).

Coronary Artery Bypass Grafting (+ Assigning Responsibility and Authority)

The length of this case reflects the enormous, multi-faceted challenges that numerous innovators overcame over many decades to develop an expensive, complicated procedure that extended and improved millions of lives. It illustrates the full range of multiplayer challenges including allocating organizational responsibilities and authority to effectively harness the initiative and resourcefulness of many individuals.

Readings:

- *Coronary Artery Bypass Grafting—Impossible to Routine* (HBS Working Paper 20-004)
- *The Halfway House: Coordination through Organizational Authority* (Bhidé 2010) p. 46-51
- *Venturesome Consumption* (Bhidé). **Only highlighted material**

Pre-class submission.

Answer questions contained in the case history here: <https://forms.gle/i8SEpWqqfrc2u1cG7>

Broader Questions (to think about in preparing for class)

What similarities and differences did you find in the development of CABG, other medical procedures, and drugs?

What does the case history add to your views about “conjectures,” “testing,” and “communication” tasks?

What have you learned or observed about the relationship between organizational structures and the development and effective use of new technologies?

What similarities and differences do you see in the structures of medical and “industrial” organizations that affect their capacity to develop and use technological advances?

Optional Readings/videos/Podcasts:

Listed under ‘Assigning Authority and Responsibility’ in the [extended reading list](#).

Computed Tomography (+ Incentivizing)

X-ray imaging, introduced in 1895, revolutionized surgery, vastly increasing the scope and reliability of non-invasive preoperative diagnosis. Combining older X-rays with newer computing technologies, CTs renewed the revolution more than seventy years later. The much higher cost of CT equipment, however, created controversy and influenced industry entry and exits.

Readings:

- *Computed Tomography—Beyond Traditional X-Rays* (HBS Working Paper 20-004)
- *EMI and the CT Scanner (A) and (B)* HBS Cases 383-194 and 383-195

Pre-class submission.

Answer questions contained in the case history here: <https://forms.gle/h8LmhUGw3EVyaN1t8>

Broader Questions (to think about in preparing for class)

What accounts for the quick adoption of CTs in the US after they were introduced in the 1970s? Were US insurers too “lenient” in reimbursing CT scans? Were European payors too “strict”?

How might the CT industry have evolved had Congress given the FDA the authority to regulate medical devices before 1972/73?

As the head of GE’s medical products division in 1997, would you encourage more investment in CTs or use the CT business as a source of cash to fund other businesses?

Optional Readings/videos/Podcasts:

Listed under ‘Incentivization’ in the [extended reading list](#).

MRIs (+ Scientific Research)

The MRI case history illustrates the interactions and contrasts between scientific and technological research (discussed in the Appendix of the previously assigned reading on Productive Knowledge.) Like CTs, MRIs exemplify an important kind of ‘multiplayer’ innovation that emerged in the 20th century: the systematic development of complex, high-cost capital equipment, such as commercial and military aircraft, power generating plants, high-speed rail, mainframe computers, and communication networks. Large, vertically integrated multinational organizations have often led this development under the oversight of national and local regulatory bodies. The CT and MRI cases illustrate the distinctive features of this model in health care.

Readings:

- *Magnetic Resonance Imaging—High Quality and Radiation Free* (HBS Working Paper 20-001)
- Appendix in the *Note on Productive Knowledge* (HBS Working Paper 21-010).

Pre-class submission.

Answer questions contained in the case history here: <https://forms.gle/gGNYE5h7JNHvaFJy7>

Broader Questions (to think about in preparing for class)

What innovations offer the most/least scope for ‘maverick’ individuals?

What have you learned about the relationship between science and technology in your other courses (and from your experiences)? What does this case history add?

How does regulation/reimbursement affect the speed and direction of technical changes in medical devices (as compared to other kinds of devices)?

As a large, diversified “user” (e.g., a hospital or a network of imaging centers), how would you select suppliers and plan to acquire emerging technologies?

Ultrasound Imaging (+'Disruptive Innovation')

Ultrasound is an older imaging technology than CT or MRI, but not as old as X-rays. The evolution of this earlier -- and considerably lower-cost --- technology provides a helpful contrast to the development of 'high-ticket' CTs and MRIs -- and raises questions about Christenson's 'disruptive innovation' model.

Readings:

- *Ultrasound Imaging – Cheap, Versatile, and Safe* (HBS Working Paper 20-001)
- *What is Disruptive Innovation?* (Christenson, Raynor, and McDonald in *HBR*)
- *Clay Christensen's Theories are Great for Entrepreneurs, but not Executives* (Bhidé and Ghemawat in *Quartz*)

Pre-class submission.

Answer questions contained in the case history here: <https://forms.gle/EatMfbPZKniUgYRe8>

Broader Questions (to think about in preparing for class)

What industry or field you have worked in or studied is ultrasound most like in its evolution and competitive dynamics?

To what degree do advances in ultrasound conform to the Christenson model of “disruptive innovation?”

How would you compare advances in diagnostic imaging to advances in drugs and procedures?

What do the older diagnostic advances tell us about opportunities in ‘wearable’ consumer devices?

CAR-T Cell Therapy (+Paradigmatic Beliefs)

CAR-T cell therapies are now considered highly 'promising' treatments that may, but have not yet, had a widespread impact on treating patients. Their development allows us to consider how – and to what extent – we can apply historical lessons to ongoing contemporary advances. The case history also illustrates the difficulty of challenging prevailing 'paradigmatic' beliefs.

Readings:

- *Chimeric Antigen Receptor T-Cell Therapy—Living Drugs* (HBS Working Paper 21-035)
- Chapters III and IV from Thomas Kuhn's *The Structure of Scientific Revolutions*
- Student paper (written for my entrepreneurship course) on Helen Coley Nauts.

Pre-class submission.

Answer questions contained in the CAR-T case history here: <https://forms.gle/AQprHX3JshFeADEq6>

Broader Questions (to think about in preparing for class)

What differences would regulating CAR-T therapies as medical 'procedures' rather than drugs make in their future development and adoption?

As the head of a cancer center that does not currently offer CAR-T treatments, when would you consider adding such treatments?

How do scientific paradigms obstruct or promote advances in health care and other practical fields? What similarities and differences do you see between scientific paradigms and the conventions and beliefs of practitioners?

To what degree does the development of CAR-T correspond to the historical patterns of medical advances? To what degree do they represent a break with history?

Fecal Transplants (+ Demand Side Catalysts)

Like CAR-T cell therapies, fecal transplants are considered promising treatments for otherwise incurable diseases that have not yet been widely adopted. They are, however, different in the extent of their scientific and technological foundations, paradigmatic obstacles, the investment they have attracted from established pharmaceutical companies, the costs of ongoing administration, and the role of “venturesome” patients in promoting their use.

Readings:

- *Fecal Microbiota Transplants—Too Simple to be Safe?* (HBS Working Paper 21-132)
- *Traditions and Rules that Limit Medical Innovation.* (Reread)

Pre-class submission.

Answer questions contained in the Fecal Transplant case history here:

<https://forms.gle/z7TJDZHzooAPYCLA>

Broader Questions (to think about in preparing for class)

Are fecal transplants more or less likely than drugs derived from fecal materials to become mainstream treatments?

What makes the role of patient demand in adopting new treatments strong or weak?

What differences would regulation of fecal transplants as medical ‘procedures’ rather than drugs make to the path of their future development and adoption?

Does the fecal transplant case history and the other case histories we have studied support or contradict the *Traditions and Rules* article (written before most of the case histories were written)? What would you change in the article?

Cicely Saunders and Modern Hospices

The hospice movement, like CABG and many other case histories, illustrates interdependencies between technical and organizational advances (palliative care and hospices, in this instance). And, although individuals rarely produce either on their own, exceptional innovators (like Cicely Saunders) often have outsized influence. They shape both the “ends” or “goals” of technological and organizational advances and the means to pursue these ends and goals.

Readings:

- *Cicely Saunders and Modern Hospices-- A Brother's View* (HBS Working Paper 24-055)
- *Access to High-Quality Hospice Care in a For-Profit World.*
- *Building the Professional Firm: McKinsey & Co.: 1939-1968.* HBS Working Paper 95-010. Focus on the introductory (p. 1-2) and concluding (14-18) parts of the paper.

Pre-class submission.

The case ends with a question about whether Cicely should or should not have opened “subsidiary” hospices. Please enter your response here: <https://forms.gle/9jpeqd2b5zRvYc8C7>.

Broader Questions (to think about in preparing for class)

How did Cicely Saunders’s choices and initiatives affect the development of the hospice movement and the specialty of palliative care?

How were these choices different from those you read about in *Tales from Successful Entrepreneurs* or that we studied earlier in this course?

Can good hospices operate as commercial businesses?

What do this and the earlier case histories tell you about the role of individuals in shaping the ‘goals’ of medical (and organizational) innovations?

Appendix: Final Paper: Guidelines, Rules, and Criteria

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 advance that has proven its practical value. The advance can include a device, technology, system, or organizational template from any field. The case histories in this course, [drawn mainly from Fuchs and Sox's 'top-30' list](#), provide examples from the medical sphere. Topics outside health care could include the development of artificial intelligence, personal computers, spreadsheets, mobile telephony, container shipping, and multiplayer techniques included in this syllabus and its optional readings (such as Human Centered Design, 'agile' project management, Objectives, and Key Result (OKR) systems, Balanced Scorecards, and A/B tests.)

The advance does not need to be an indisputable success – almost all important innovations have some limitations and drawbacks. 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 (such as Facebook or Amazon) unless (like the St. Christopher's hospice) they have created a 'template' that has been more broadly adopted. You may, however, write about the development of technology that one company came to dominate (e.g., Google in internet search), provided the paper does not focus on what just the dominant company did.)

The paper should contain three distinct segments that:

Describe the basic story of the advance, including the individuals and organizations who made it happen. The case histories in the course provide a model, but you don't have to follow it. (70% of credit)

Analyze the facts in your description. 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)

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 7,000 words long (and no more than 15 double-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 specific 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 supporting, challenging, or modifying ideas in the readings. 6) Use clear language and an easy-to-follow structure. Simply put, a good paper will be one that will have value many years from now, and you will remember with pride!

Endnotes

¹ Bhidé. 1996. "The Road Well Traveled: A Note on the Journeys of HBS Entrepreneurs." HBS Case 396-277.

² Bhidé 2000. *The Origin and Evolution of New Businesses*. New York, NY: Oxford University Press, 2000.

³ As Roethlisberger 1977 put it. (Roethlisberger, F. J., & Lombard, G. F. F. (1977). *The elusive phenomena: An autobiographical account of my work in the field of organizational behavior at the Harvard Business School*. Division of research, Graduate school of business administration, Harvard university.

⁴ According to Forrester's (2017 p. 6) reading of John Stuart Mill: "For Mill, then, For Mill, then, reasoning is always from particulars to particulars, because the general form of a proposition, or the general class to which particulars belong, are simply names, or *marks* as he calls them, which we employ because of our fallible memories." (Forrester, J. (2017). *Thinking in cases*. Polity Press.) In my learning and teaching I have similarly come to believe in the power of what Forrester calls "thinking in cases" and reasoning from the particular to the particular. Like the general propositions in Mill, frameworks mainly compensate for the limitations of our memories about the particulars.