

INTRODUCTION

I introduce innovation and entrepreneurship to a wide variety of audiences, including university students at the undergraduate and graduate levels and executives in companies. There's one thing I can almost always count on: The audiences have already been taught to see innovation and entrepreneurship as one and the same. And so, as they try to apply their skill sets to the subject matter, the same contradictions, paradoxes, and even sense of frustration seem to kick in—no matter their backgrounds.

I attribute this to two fundamental things. The first is an overabundance of so-called recipes for creating a startup or having an innovation. Students come to class hoping I will give them a subroutine that they will merely have to execute, as if they were computers. Many have been led to identify any experience with or instruction in preparing to “pitch” a business concept to others with actual preparation for *conceiving* a solid idea for innovation or *executing* on a business concept. The second is a general lack of acknowledgment that the very same language that can be so powerful for articulating a business, developing a business strategy, and executing that strategy can just as easily mislead the aspiring innovator—especially if applied too soon to what generally amounts to a hunch.

After years of witnessing students making those mistakes, I have come to understand that this situation flows from a conflation of entrepreneurship and innovation—especially in academia. That conflation has led to the

creation of a bunch of truisms that focus on managing innovations and organizations, which may be quite useful at some point, but have little or nothing to do with actually innovating. Put simply, we talk a lot about how innovations happen and are managed, but rarely discuss how you actually produce one—a huge multidisciplinary space that is rarely explored. The tasks may require you to venture a bit into the impossible. Being empirical and experimental in that space—something that may seem out of fashion but is sorely missing—is the subject of this book.

The field of entrepreneurship and innovation as we know it is full of amazing stories, inspiring trajectories, and powerful figures—ones we know of only in hindsight. The field is also ripe with opportunities to enter contests and win awards. These “idea” events are a lot like beauty pageants; the pitches are the “talent competition.” They sometimes even propel forward aspiring entrepreneurs who have a solid, powerful idea. The key, though, is how solid and powerful their idea was before they entered the event. The pitch itself is show and tell.

Beauty pageants end with the crowning of a winner. Crowned or not, you still need to figure out what you’re going to do next.

As people prepare for these events centered on entrepreneurial “beauty,” they feel the urge to copy “beautiful”-looking, successful entrepreneurs. One can only wonder how many black turtlenecks, jeans, and wireless headset microphones are sold in advance of these events, or how many prospective presenters practice the line “and we launch today” in front of mirrors. But far more often than not, what we think we know about already successful entrepreneurs includes very little about how they developed their ideas, how they assembled and managed their organizations, or the struggles they went through to evolve their ideas toward impact at scale.

After all, identifying yourself as the “founder” of a business is as easy as paying a state’s incorporation fee.

In class, I have learned to help students recognize these contradictions and paradoxes by taking this archetypical conception of entrepreneurship and innovation to its comical extreme: I suggest they incorporate and then post their new status as “founders” on the social network of their choice.

Sometimes I “knight” students—imaginary sword and all—as “recognized entrepreneurs.” I give others “official permission” to innovate. I encourage them to find a suitable entrepreneurial beauty pageant to enter. I congratulate them on their success, and then I advise it might be a good time to figure out what their new companies actually do.

There’s nothing inherently wrong with the entrepreneurship theory from which my students have developed their paradoxes and contradictions. It’s just that the theory is all about managing an organization that has already settled on its target audience(s).

An aspiring entrepreneur or innovator lives at $N = 1$. The merits of her or his innovation or organization will be measured relative to adoption, not by comparison with other innovators or entrepreneurs. The one problem that gives her or him purpose has to be solved with the resources at hand and at scale—it all needs to work. It does not really matter whether the way the problem is ultimately solved falls at the center of some graphical distribution of entrepreneurial performance or at the graph’s tail end.

The statistics pertaining to who entrepreneurs are or how they perform do not really apply. That is a limitation of statistics as the chosen method, not a problem with the underlying research. The keywords and concepts used to map entrepreneurial ideas are indexed by the final outcome—a successful startup, a product, an innovation, an enterprise, or more generally the establishment of any kind of organization—not by the initial premise, knowledge, and resources of the entrepreneurs studied.

Keywords and highly specialized concepts such as need, product, distribution, value chain, users, lead users, competitive forces, value creation, and value capture do not have meanings set in stone. At the beginning of an innovator’s inquiry, they are largely undefined and ambiguous; they acquire their precise meanings and their analytical strength only over time through the inquiry of the innovator, from the organization that emerges, and in the context of the problem that organization ultimately solves. It’s like thermodynamics: We don’t need to understand the science to enjoy an iced

beverage, but if we ever need to maintain temperature constant for a brief while, the knowledge that temperature remains constant during the transition from liquid to solid may be critical.

It is easy for aspiring entrepreneurs to characterize their ideas using their best understanding of those concepts in the abstract. It is more difficult for them to realize that whatever they end up with may walk and quack like a startup but not yet be a startup. The business concept they may produce remains a good aspirational destination to guide their inquiry, but that's all. I encounter this time and again in class: Incipient entrepreneurs confuse their initial guess of a destination with an actual plan of action.

Unfortunately, it's easy to fall in love with the craft that goes into articulating a concept using precise technical management terms while losing sight of the job ahead. It's the same as burying yourself in technical jargon from whatever field you've been working in. Both are excellent examples of over-engineering—something every engineer is strongly encouraged to avoid.

This is not a shortcoming of the literature of management or that of product design. It is a sign that other fields of inquiry—particularly those concerned with engineering, with high technology, with science, with tinkering, and more generally with the synthesis of new ideas—have yet to offer viable strategies for you to engage in entrepreneurship and innovation that are compatible with that world view. In a way, entrepreneurship and innovation emerged first as a scientific and management field, but they still lack an experimental and engineering footing. Chemistry went through this same process before chemical engineering emerged. A symptom of this lack is that we see more people concerned with idea selection than we see people concerned with actually producing innovations.

The real impact of this shortcoming is that more and more aspiring entrepreneurs and innovators focus on new consumer products and on leveraging reasonably commoditized technologies (e.g., the Web and apps). Meanwhile, fewer pay attention to opportunities in more complex systems and new technologies or use either to conceive entirely new categories of activity. They also fail to address meaningfully how to scale up their ideas until they

become viable business concepts to which they could then apply what they have learned (or can learn) about management and entrepreneurship.

This situation persists because the literature and the lessons aspiring entrepreneurs and innovators are applying are intrinsically analytical and statistical and so are most conducive to identifying arbitrage opportunities in well-outlined industries centered on well-identified markets or users. The “toolbox” is biased toward the analysis of what already exists. If an aspiring entrepreneur wants to use the same tools to conceive a new market, to discover an actual real-world problem, or to untangle the complexity of an industry to reveal new opportunities, he or she may discover that the tools demand a significant dose of creativity just to overcome that “bias.” That’s creativity that is not directly applied to innovating but to make recipes work for something other than what they were intended. We might as well equip aspiring entrepreneurs with broader knowledge about producing innovations so they can channel that same creativity more effectively.

Again, an aspiring entrepreneur or innovator lives at $N=1$, and where he or she lands in a distribution of innovators is immaterial. That isn’t the objective. What an aspiring entrepreneur or innovator needs to do is synthesize *one* robust idea—a space of opportunity—and make that work.

A few words regarding this book’s tone are warranted.

Much of the language used to describe innovation concepts is contaminated by knowledge of the end points of innovation stories. The contamination renders these concepts useless, even if they are accurate and useful for the analysis of entrepreneurship and innovation stories in hindsight. Entrepreneurs and innovators, however, operate in a highly dynamic environment. That makes static concepts difficult to apply. I see the contamination manifested in some questions from students that really boil down to this: “Would you please now give me the solution at the end of the book?”

I see the same problem elsewhere. Knowing the specific mathematical formula or model constructed to summarize a specific piece of knowledge

does not immediately translate into understanding the phenomena that underlie that formula or model. Just as an innovation story has an end point, that formula is an endpoint. Students can apply it skillfully without ever learning to recognize the wide variety of situations in which the original knowledge might apply.

An innovator can rapidly make lots of guesses about business model, value, value proposition, user, and product and get to a semblance of a new venture. Once there, though, it becomes inordinately difficult to unbundle the guesses. The concepts are correct, but if used too early they may fool innovators into mistaking their guesses and the structure built around them for actual evidence of an opportunity. Worse yet, the same tools that result in a guess about an opportunity may not be the tools needed to unbundle that opportunity for the purpose of further experimentation. So, in this book I avoid this “contaminated” language in early chapters and focus instead on an approach to synthesize solutions to real-world problems. I offer strategies for connecting the results of the readers’ own inquiries to those concepts in later chapters, after readers have a strong basis upon which to build and evolve their ideas and thus are more likely to apply and use those words in the ways they were originally intended. As the reader’s inquiry into a problem progresses, using those words will become critical to adding the last layer of detail to whatever “innovation” is proposed.

The subject of entrepreneurship and innovation is tightly linked to a promise of economic growth, generally through the development of an organization. That strong connection may make my decision to avoid the “contaminated” language I mention above seem odd, and may invite criticism. My choice stems from an observation: Whatever the “innovation endeavor” my students engage in after we first meet, every endeavor is best characterized by everything there was left to learn about the problem they wanted to solve than by any disciplinary technique they brought to it at the outset—no matter how skilled they may be. This choice likely reflects my bias: I understand innovation better as an outcome of an industrious learning process that cannot be fully comprehended from the safety afforded by the methodologies of any one discipline alone. I want readers to enjoy innovating as a

learning process, one that can be practiced and that benefits from multiple disciplines and viewpoints. The basis for this motivation is my own experience innovating, and teaching many others to innovate, on various levels and across multiple disciplinary domains.

Shying away from technical jargon allows me to begin the story for this book at the very beginning of innovating, when everything amounts to a hunch. The chapters in the book follow a sequence that is consequent with that choice, building the concepts for innovating from the perspective of an unassuming doer.

That said, each chapter is written so it can also be read for future reference independent of other chapters, or in a newly created chapter sequence—that is, different than as published here—to suit the reader’s specific purposes or “beginning.” Reading chapters out of sequence can reveal different perspectives on innovating. For instance, beginning with chapter 6 and then reading chapters 11 and 12 reveals a story about how to implement this approach to innovating as a process in innovation management. Building on that sequence, the remaining chapters provide an innovation manager with specific strategies to help innovators progress through the process from hunch to decision.

The “takeaways” at the end of chapters should make it easy to develop your own sorting function. Cross-references to other chapters should help you design your own path through the book. The academic commentary in the book’s epilogue relates the concepts discussed in the chapters to the multidisciplinary literature upon which they rest.

My hope is that, after reading a few chapters, you’ll become curious about the subtle shift in mind-set regarding innovating that’s portrayed in the book and you’ll feel free to read the rest of the chapters in an order that suits your interests. Feel free to do so, just as *Star Wars* fans have come up with at least three different sorting functions for the episodes in the saga (release order,

episode order, and machete order¹), each unfolding a different story line but all still *Star Wars*.

Finally, a few words on learning. I liken innovating to learning—the learning that occurs while you are engaged in a very general kind of problem solving, with no guarantee that you will come up with a solution. This is extraordinarily liberating. The operating question isn’t “How do I apply this framework to that?” but rather “What is the knowledge or evidence I need to acquire to make that problem real?”

Innovating by making real-world problems tangible offers you an alternative to the many innovation recipes that have emerged from product design, product marketing, lean manufacturing, and technology readiness—the recipes my students have in mind when they ask the “contaminated” questions. To get started, all those recipes seem to require a well-formed idea about a product, a user base, or an organization—that is, they require that a large part of your innovating be fixed before you can even begin. That feels suffocating to me. The urgency to “productize” every observation feels unnecessarily constraining, and the rush to drive every action toward identifying product placement opportunities feels like opportunism. Most of these recipes seem to take a “good idea” as a given, and hinge on convincing others that it is, indeed, good—and then placing it.

That is quite the opposite of learning. This book is about learning.

My training does not seem to have prepared me well to produce new “good ideas” from the get-go. Instead, it has prepared me to arrive at them. I don’t particularly care for processes that put me in the somewhat weak position of having to convince others that an idea is good before I myself am persuaded. And I am not particularly motivated to perform tasks that are presented primarily in terms of pleasing users or designing to their liking. I would rather solve a real-world problem.

What I, and most of my students, seem to get are intuitions about problems—*hunches*—and a desire to learn why our first intuitions are wrong. Some students feel compelled to present their hunches as if they were products; but they are just that, hunches.

Whether you ultimately decide to engage in innovating by focusing on making a problem tangible, as I propose and explain in this book, or instead to follow one of the innovation recipes is your choice. This book doesn't replace those recipes, which serve a purpose. The approach presented here is, though, wholly different; the concepts undergirding this book borrow nothing from those other recipes. Working on the problem requires a new vocabulary, a different attitude toward innovation, and a subtle mind-shift.

The book is a manifesto for doers to embrace their doing as an instrument for exploration. It is also an explorer's guide into the impossible; in fact, I see innovators as the explorers of our time. The book shows a path for exploration: Accept that you will learn by being wrong as you venture into the impossible in search for that thing others will come to appreciate as magical—an “innovation”—when your turn comes to tell your story in hindsight.

To be clear, I am not taking a position on whether innovation can or cannot be learned. I just think it's a moot discussion. I hope to persuade you that innovating, like most other activities, is something you can practice and become better at with the right combination of knowledge and the kind of muscle memory that comes from repeating certain tasks—that is, from *doing*. Innovating takes doing, practice, and perseverance—which are how your brain has adapted to learn best. At some point, you ought to learn to trust that your brain can operate quite well outside the realm of formulas.