

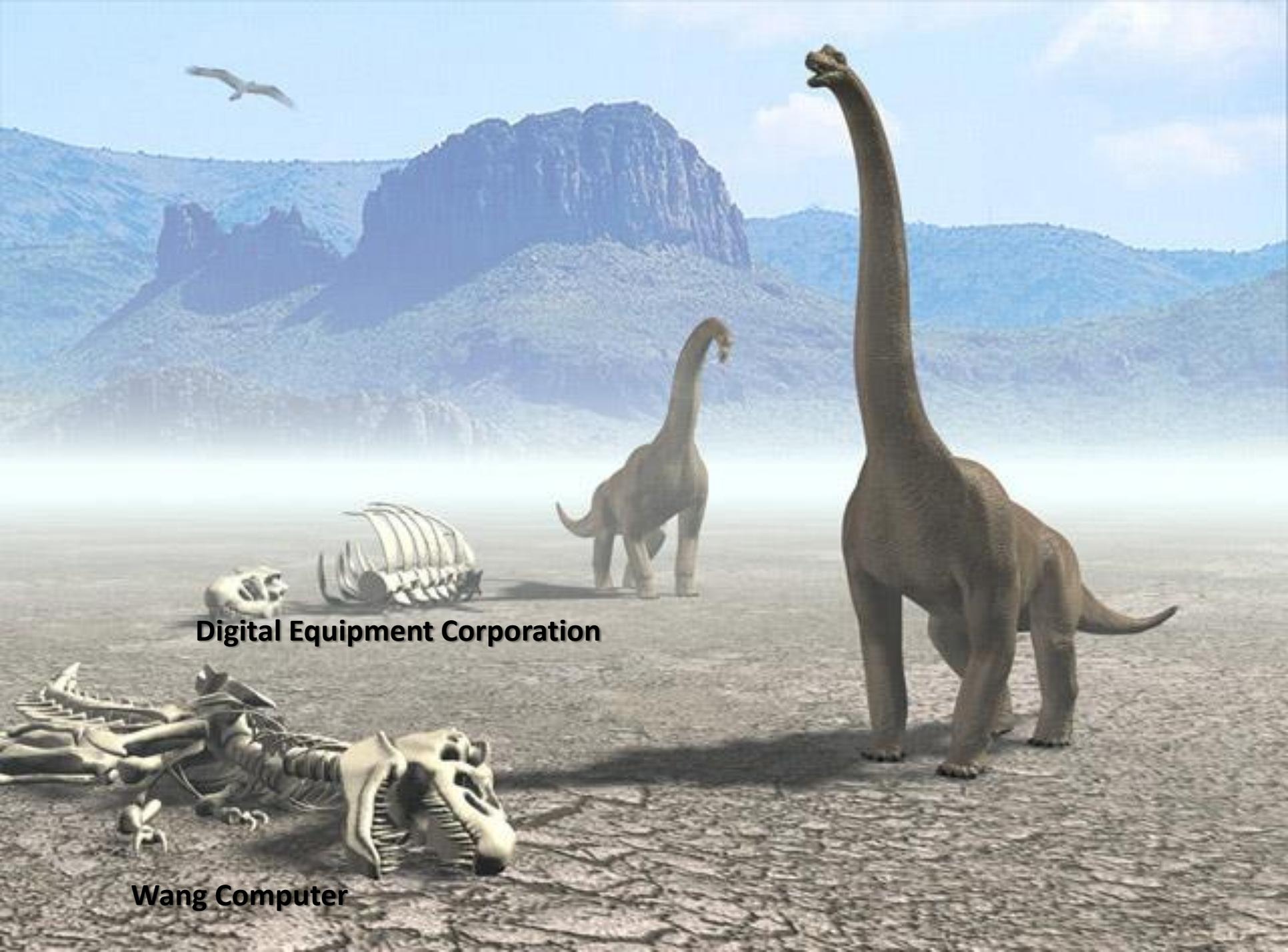
Introduction to Entrepreneurship

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Why do Innovation and Entrepreneurship Matter?

- Innovation and Entrepreneurship has proven to be the most successful way to address problems and create both economic and social opportunity.
- Companies that fail to innovate often disappear.
 - Digital Equipment and Wang Computer, both born and operated right here in this region, were once two of the largest and most important computer companies on the globe. They did not see the microcomputer (PC) coming and today they do not exist and Apple and Microsoft are two of the largest companies in the world.
 - Borders once operated 659 bookstores all across the county. They never saw Amazon.com coming, and by the time they did it was too late. Gone.
- Companies that do innovate can succeed wildly.
 - Google, Amazon, Facebook, Twitter, Instagram, and so many others are major companies who are younger than many of our university students!
- Geographic regions that foster and support innovation –often around great research universities are flourishing economically.
- Innovation and Entrepreneurship create jobs for our citizens, cures for our diseases, and new ways for human beings to interact.



Digital Equipment Corporation

Wang Computer

Two Key Concepts in Innovation

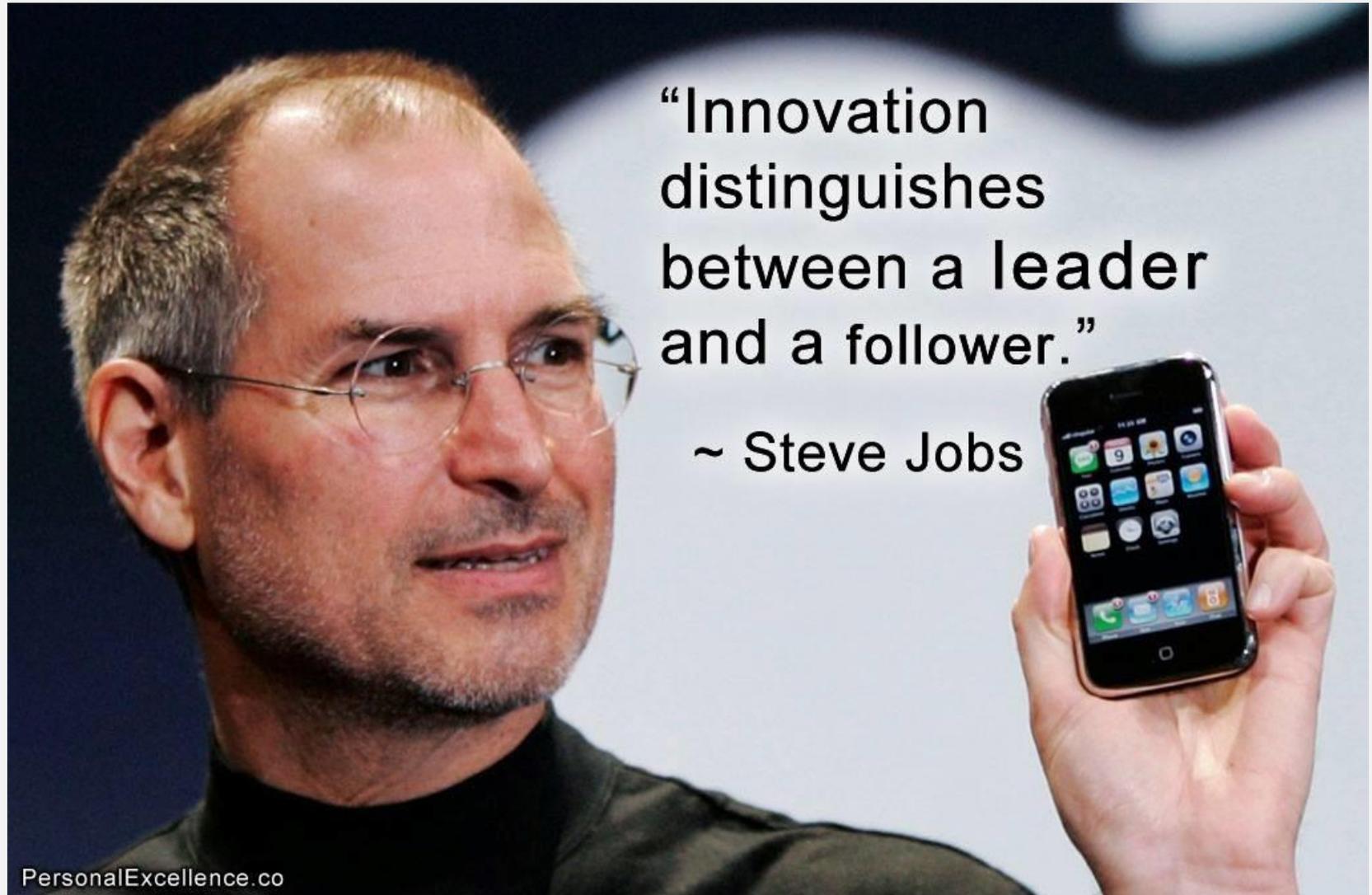
- Joseph Schumpeter –Harvard University economist from Austria
 - **Creative Destruction** – 1934- new products and technologies make old products and technologies obsolete
- Clayton Christensen –Harvard University Management
 - **Disruptive Innovation**-1997 – new products begin in new, unexplored markets but grow in quality and capability to displace older markets.
 - Mini-computer disrupted mainframes and were in turn disrupted by PC's.
 - Steel mini-mills created poor quality steel at low prices to take the least profitable part of the steel market. They then grew to displace the old-line steel companies.
- I cannot over-emphasize how important these two topics are in understanding entrepreneurship. Creative destruction and disruptive innovation are indeed closely related, disruptive innovation is a very special case when a company enters into a very low end of a market at a place where the dominant players are not so interested because it is not profitable or not able to satisfy their largest customers. But, the company doing the disruption gets a foothold in the market, establishes itself, and then learns how to do the things it needs to do to enter the more profitable and sophisticated portions of the market.
- Often the established companies never see it coming.
 - <http://www.claytonchristensen.com/key-concepts/>
 - http://en.wikipedia.org/wiki/Clayton_M._Christensen
 - http://en.wikipedia.org/wiki/Disruptive_innovation

Innovation is what makes enterprises sustainable

- In the immortal words of Andy Grove
 - the former Intel Corporation CEO
- **“Only the Paranoid survive!”**



Andy Grove congratulates Mark Bernstein of [Linc](#)



What is Entrepreneurship?

Now that we have learned about some entrepreneurs and why innovation is important, we should take a moment to define what we mean by entrepreneurship when we use the term. We shall look at the definition given by three key thinkers on the subject.

- Joseph Schumpeter: Entrepreneurship is seen as new combinations, which include the introduction of new goods, new methods of production, opening of new markets, new sources of supply, or a new organization.
 - Joseph Schumpeter -Austrian Economist who became a Harvard Professor
 - http://en.wikipedia.org/wiki/Joseph_Schumpeter
- Peter Drucker: Entrepreneurship is an act of innovation that involves endowing existing resources with new wealth producing capacity. –
 - Peter Drucker, Professor and Management Consultant
 - Called “Founder of modern management” by Forbes Magazine
 - <http://www.forbes.com/sites/stevedenning/2014/07/29/the-best-of-peter-drucker/>
 - Aside: start thinking about how you and others might define “wealth.”
- Jeff Timmons: Entrepreneurship is a way of thinking, reasoning and acting that is opportunity obsessed, holistic in approach and leadership based. –
 - Jeff Timmons late Professor at Harvard and Babson
 - Author: “New Venture Creation,” “The Entrepreneurial Mind,” and others.
 - http://www.inc.com/mike-hofman/2008/04/remembering_an_entrepreneurial.html
 - <http://uir.unisa.ac.za/bitstream/handle/10500/2050/01dissertation.pdf?sequence=2>
- These three definitions help fill out an evolving perspective on who entrepreneurs are how they operate. Schumpeter and Drucker focus on the process while Timmons focuses on the characteristics of the entrepreneur herself or himself.

Who is an Entrepreneur?

- Spots an Opportunity (see a problem)
- Has New Idea (finds a solution)
- Is an Innovator
- Takes Well Thought Out Risks,
 - Calculated risks and not gamblers risks
- Finds the resources to implement the innovation.
- Creates and builds a business or other enterprise
- Makes change

- According to the text: “*The skill to spot opportunities and create new ways to exploit them is at the heart of the innovation process.*”

Business model innovation

Not all innovations are technology driven or new product focused. Some are simply new ways of organizing old businesses.

- Southwest Airlines in the US and Ryan Air in Europe found new (and very large) markets simply by giving passengers no-frills lower cost travel options.
- Dell Computer: Rather than build computers and then send them to retail stores for sale, like other computer makers of the time, Dell computer offered an online service that would allow the buyer to customize a computer and have it delivered directly. This gave the customer the computer they wanted at a lower cost by cutting out the cost of inventory and the retailer's markup!
 - Cutting out the companies that do wholesaling or retailing is often termed “disintermediation.”
 - **Disintermediation** is an important technique for developing new business models and for reducing expenses –potentially allowing lower prices and better service to the end user.
 - **Mass Customization:** Another key point here is that new business models are enabling products and services to be individually tailored to the needs of users.
 - Mass customization is a polar opposite of Henry Ford's old maxim for the Model T: “You can have any color that you want as long as its black.”
 - Interestingly, advances in genomics are allowing even medicines to be customized to single individuals.

Invention is not necessarily innovation.

- Long ago it was said that “if one could build a better mousetrap, the world would beat a path to your door.”
 - That is ridiculous.
- Invention can be a nice place to start, but unless you do the work necessary to bring the product to market, the world will NEVER find your door.
- Xerox, in their famed Palo Alto Research Center (PARC), invented many of the key technologies that characterize computers today:
 - The graphical user interface, windows, the mouse, object oriented programming, laser printers, and many others.
 - They never really implemented the technologies and got them to market.
 - Steve Jobs visited PARC and used their ideas to create the next generation of computing at APPLE. Microsoft Windows was not far behind.
- Thomas Edison is known as an inventor, but he really did not invent the light bulb, the phonograph, or the movie projector. Instead he improved them enough to bring them to market.
- Albert Einstein once said “first we have to make all the mistakes.”
- Edison felt exactly the same way.

Openness and the “Not Invented Here” (NIH) syndrome.

- Sometimes organizations cannot recognize a good idea even if it is laid in front of them.
- Western Union, the largest communication company of the 19th century was offered the telephone by its inventor, Alexander Graham Bell. They declined saying “*we have concluded that it has no commercial possibilities.*”
 - Yeah, right!
- The founder and CEO of Digital Equipment Company (DEC) declined to get involved in personal computing. In 1977 he famously asserted that “*There is no reason for any individual to have a computer in his home.*”
 - Yeah, right!
 - Today DEC is gone and the PC is in every home with IBM, Microsoft, Apple and others reaping the benefits that DEC (from Maynard MA) could have.
 - Thousands of Massachusetts employees lost their jobs and California came to lead the computer market.

Making an organization sustainable.

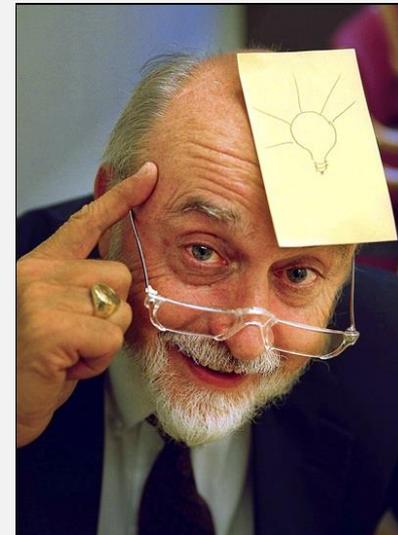
- Some firms have survived for over a century by constantly being open to innovation.
- IBM began by marketing timeclocks, tabulators, scales and other items. They kept adapting and in 1961 released the IBM Selectric typewriter and soon swept the market. They had essentially become a typewriter company. By the end of the decade they were selling IBM 360 computers to businesses and had become a “Computer Company. By the 1980’s they were selling the IBM PC and dominating personal computing. As the 21st century arrived they were converting themselves into a consulting and services company and eventually sold off the entire PC business. Today they are trying to convert themselves into a big data and artificial intelligence company –with accompanying services. Their Watson supercomputer is renowned for being the first machine to beat a world chess champion.
- Similar stories could be told about General Electric (GE), Proctor and Gamble, and other long lived firms that found a way to innovate and change –even when the change almost killed their former businesses.

Types of Innovation

- The types of innovation are given in the text as
 - **Product:** changes in the products or services that an organization offers.
 - **Process:** Changes in the ways these offerings are created and delivered.
 - **Position:** Changes in the context into which the products or service are introduced
 - **Paradigm: (Business model innovation)** Changing the underlying mental models with frame what an organization does.
 - I guess that the authors wanted to create a catchy “4 Ps” mnemonic, but please take note that “business model innovation” is the generally accepted term for this. Yes, business model innovations can often be seen as “paradigm shifts.”
- I prefer the term Business model innovation to his use of *paradigm innovation*. Most authors, professors, and researchers prefer that term.
- It is sometimes difficult to put an innovation in any one category. Any innovation may overlap several categories.

Examples of Innovation Types

- **Product/Service:**
 - A new model car. A new computer. Facebook. Discount brokerages.
- **Process:**
 - Just in time manufacturing. Six sigma. Robotic assembly of cars. Mass customization. Delivery by drone.
- **Position:**
 - Viagra (sildenafil) was originally developed to treat hypertension and angina pectoris. In the trials they noticed some interesting side effects. The rest is history.
 - Post It Notes. A 3M scientist was trying to develop a super strong adhesive. He failed miserably by creating a very weak low tack adhesive. After ten years of trying to figure out a use for it, they tried post-it notes. The rest is history.
- **Business model innovation : (Paradigm)**
 - Dell does direct customization and sales of PC's.
 - Henry Ford changes auto manufacturing from custom crafting to mass production.
 - “You can have any color you want as long as its black.”
 - Apple transforms the music business: iPod, iPhone, iTunes
 - Spotify “rents” rather than sells music.
 - Nintendo creates Pokemon Go to be played on your phone!
 - No more need to make hardware!
 - Netflix delivers digital video on media to the home and then
 - Netflix replaces media with network digital delivery.



Intensity of Innovation

- Innovations are often grouped into
 - incremental innovations and
 - radical innovations
- It is best to view these classifications as a spectrum and not simply a binary choice. Innovations will fit on the spectrum at some point. Some are more or less in the middle, while others are easier to place toward the two end categories.



- Incremental Innovation
 - Automobiles introduce LED lighting
 - GM saves fuel in their trucks by shutting down four of the eight cylinders during light duty driving.
 - Netflix decided to mail out Videotapes and DVDs rather than make the user go to a store (Blockbuster) to pick it up. (Bye bye Blockbuster)
 - Borders and Barnes and Noble add cafes to bookstores and make them neighborhood destinations.
 - “Smart” Television sets enable access to network based resources.

Intensity of Innovation –Radical Innovations

- Radical Innovation

- Tesla markets an all electric high performance car.
- Toyota creates the first mass market hybrid cars.
- Google creates a self driving car.
- Netflix decides to deliver video over the network rather than on some media.
- Amazon sells book directly to consumers over the network.
- Tinder creates a cheap widely available app that dispenses with the usual (older?) social conventions around dating.
- Uber (Lyft, Sidecar, Didi Chuxing: China, BlaBlaCr:India) organizes private citizens and their cars to provide an alternative to taxi service.
- AirBNB (FlipKey, HomeAway, VRBO, Wimdu: Germany, 9Flats: Europe, Tujia: China) lets individuals rent out their homes or rooms in their homes to others in competition with hotels and motels.

The Traditional or Causal Model

- The text posits a traditional (causal or serial) model of entrepreneurship as we saw earlier.
 - Spots an Opportunity (see a problem)
 - Has New Idea (finds a solution)
 - Is an Innovator
 - Takes Well Thought Out Risks,
 - Calculated risks and not gamblers' risks
 - Finds the resources to implement the innovation.
 - Creates and builds a business or other enterprise
 - Develops the idea
 - Makes change and captures the value
 - (can be financial value or social value.)
-
- Recent research has shown flaws in the causal model.

An Alternative Viewpoint-Effectual Entrepreneurship

There are those who have studied entrepreneurship carefully who have criticized the causal process as much too deterministic. Life is simply not that orderly! Saras Sarasvathy (U. Virginia) has proposed an alternative formulation that she and others term “the effectual entrepreneur.” In their formulation there are five major principles:

Bird in Hand – Who are you? What do you know? Who do you know? What do you have?

Affordable Loss –Limit risk by focusing on the downside and knowing what you can afford to lose when you go after the upside.

Lemonade – Use your lemons to make lemonade. Use the bad news as a clue to what might work in new markets.

Patchwork Quilt – Form partnerships. Working together can increase the probability of success through co-creation of new markets.

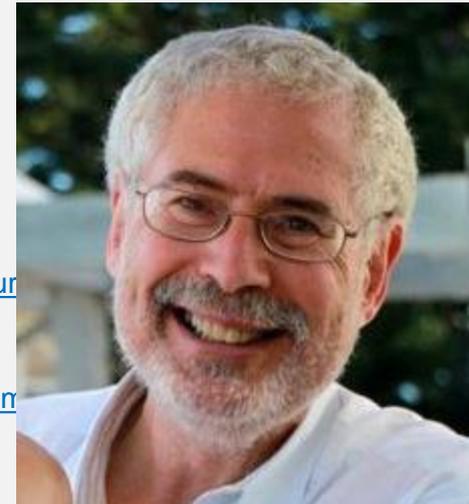
Pilot in the Plane –Control rather than predict. The future is created rather than found or predicted.

- <http://www.effectuation.org/sites/default/files/documents/effectuation-3-pager.pdf>
- <http://www.imd.org/news/Creating-entrepreneurs-that-create-opportunities-the-Effectual-Entrepreneurship-textbook.cfm>
- see also “Effectual Entrepreneurship”, by Stuart Read, Saras Sarasvathy, Nick Dew, Robert Wiltbank and Anne-Valérie Ohlsson Routledge Publishing; NY, NY (2010).

We will look at this more closely in later chapter.

Steve Blank

- Steve Blank, Stanford, became the leading apostle of business plan rejection about five years ago. In 2009 he wrote that *“In the real world, most business plans don’t survive the first few months of customer contact. And even if they did – customers don’t ask to see your business plan.”* Steve advocated for the supremacy of business models and he enshrined the concept of the pivot as part of his mantra of the “Customer Development Process” with the concepts of
 - *“minimum viable product (MVP),”*
 - *“iterate and pivot”,*
 - *“get out of the building,”* and
 - *“no business plan survives first contact with customers.”*
- <http://www.forbes.com/sites/steveblank/2013/06/18/the-lean-launchpad-educators-cour>
- <http://steveblank.com/about/>
- <http://steveblank.com/2009/05/07/business-plan-competitions-2/>
- <http://www.businessinsider.com/the-lean-launchpad--teaching-entrepreneurship-as-a-m>
- <https://www.udacity.com/course/how-to-build-a-startup--ep245>
- <http://www.entrepreneur.com/article/219772>
- <http://nciia.org/sites/default/files/u7/Educators%20Guide%20Jan%202014.pdf>



The Lean Launchpad

- In a future chapter we will introduce the concept of the lean launchpad, as it is used in the National Science Foundation iCorp Program to encourage scientists and engineers to move their research into the market place through entrepreneurship.
- You will no doubt notice the similarities to the approach and the conclusions that Steve Blank reached in the development of the lean launchpad.
- Sarasvathy is a scholar who has done a careful study and published her work in peer reviewed journals to be evaluated and perhaps substantiated (or refuted) by her peers.
- Blank is a serial entrepreneur of some success, who draws on his personal experiences and is a consumer of research rather than a producer. His formidable marketing skills have made the lean launchpad a hot topic around the world.
 - <http://www.forbes.com/sites/steveblank/2013/06/18/the-lean-launchpad-educators-course/#df15d0d43a74>

Why be an Entrepreneur?

- ▶ Be their own boss
- ▶ Pursue their own ideas
- ▶ Realize financial (or other) rewards

<http://digital.films.com/PortalViewVideo.aspx?tid=3244&loid=2698>

<http://money.cnn.com/video/#/video/fsb/2007/12/20/acton.call.of.entrepreneur.fsb>

Characteristics of Successful Entrepreneurs

- **Passion for the Business**
 - Desire to change the World
- **A Product/Customer Focus**
 - Steve Jobs was perhaps the epitome –although he did say that “A lot of times, people don't know what they want until you show it to them.” -BusinessWeek (25 May 1998)
- **Tenacity Despite Failure**
- **Execution Intelligence**

- **Why does the World Care?**
 - Innovation –Change the World
 - Job Creation

Rate of Starting New Ventures

- Rate depends upon need, culture, and governmental environment.
 - Need: individuals in areas where good jobs are not plentiful often must create their own. Peru 27.2% or Brazil 17.5%
 - Culture: Some cultures are more supportive of new venture formation.
 - California is generally considered to be more supportive than Massachusetts –although that has improved a lot!
 - The US (7.6%) is more supportive than Russia (3.9%)
 - Governmental issues: entrepreneurship relies on certain economic freedoms as well as a well structured legal and financial infrastructure.
- Failure is overstated at 9 out of 10. According to SBA, after four years 50% are open, 17% are closed but considered successful, and 33% have failed.

Passion drives Key actions:

- The ability to learn and iterate
- A willingness to work hard for an extended time
- Ability to overcome setbacks and “nos.”
- Ability to listen to feedback on the limitations of the organization and yourself.
- Perseverance and persistence when the going gets tough

Common **Myths** About Entrepreneurs

- they are born -not made
- they are gamblers
- they are motivated primarily by money.
- they should be young and energetic
- they love the spotlight

– **NOT TRUE!**

Common traits

- Moderate risk taker
- Networker
- Achievement motivated
- Alert to Opportunities
- Creative
- Decisive
- Energetic,
- Strong work ethic
- Long attention span
- Optimistic
- Persuasive
- Promoter
- Resource Assembler/leverager
- Self-confident
- Self-starter
- Tenacious
- Tolerant of Ambiguity
- Visionary

What are the Skills required to be a successful Entrepreneur?

- What kind of product/service will you offer and what value does it create for people?
- Idea generation/opportunity identification
- Product development
- Who will buy your product? Who is your target market?
- Marketing Skills
- Market Research
- How to fund your business and make money?
- Business Finance
- Networking
- How to manage and grow your business?
- HR management, operational management, strategic management, etc.

UML Students have developed business ideas in

- Real estate
- Restaurant
- Medical device
- Composting
- Vending machine
- GPS application
- Cell phone apps
- Campus transportation
- Day care center
- ecommerce website
- Retailing
- Consider the **DifferenceMakers** Program at UML

Changing Demographics

- **Women**
 - 6.5 million women owned firms in 2002 growing at 19.8% and generating \$940 B and employing 7. M people.
- **Minorities**
 - Increasing growth rates led by Latino entrepreneurs
- **Seniors**
- **Youths**

Reminder: Two Key Concepts –one in text and one not.

- Joseph Schumpeter –Harvard University economist from Austria
 - **Creative Destruction** – 1934- new products and technologies make old products and technologies obsolete
- Clayton Christensen –Harvard University Management
 - **Disruptive Innovation**-1997 – new products begin in new, unexplored markets but grow in quality and capability to displace older markets.
 - Mini-computer disrupted mainframes and were in turn disrupted by PC's.
 - Steel mini-mills created poor quality steel at low prices to take the least profitable part of the steel market. They then grew to displace the old-line steel companies.

Diana Nyad

– Age 64 –Succeeds on fifth try from CUBA to Florida

- Three things:
- Never give up
- Never too old
- Never alone
 - life is a team sport



Persistence –Keep On Smiling and Moving Forward

- When I was young, I thought it was about being brilliant. Now I know that brilliance is good, but persistence wins the day!
 - Jack Wilson
- Don't Look back, something might be gaining on you.
 - Satchel Paige

