Innovation

• Everybody, it seems, is interested in innovation.

• People seek innovation for
  • Short term concerns
    • Product designs
  • Long term concerns
    • Education, pensions, healthcare

• Chilean National Council on Innovation for Competitiveness reports on how innovations emerge with the title «Surfing Towards the Future»

• This presentation is about the reflections of Peter J. Denning about the report.
Innovations as historical emergences

- Innovation is a new combination of existing technologies.
- Timing is critical. Many innovation proposals fail because of bad timing.

Scrolling map from 1930s
About the timing

• They invented calculus around the same time in the 17th century

Isaac Newton

Gottfried Wilhelm Leibniz
About the timing

- These 3 discovered the oxygen around the same time in 18th century

Carl Wilhelm Scheele  
Joseph Priestley  
Antoine Lavoisier
Management and Innovation

• Do innovations fail due to management issues?

• No matter how much you plan, there is no such thing as a future-that-will-happen, only a set of possibilities.

• There are unpredictable events.
Creativity and Innovation

- Popular Science – Oct, 1939.
- “Carrying four persons and a sewing machine the world’s weirdest bicycle recently had a tryout in Chicago...”
- Creativity is not enough.
What about geniuses who changed the world?

- Pasteur was a surfer.
- 200 years before his time chemistry did not exist at all.
- He invented the anthrax vaccine but did not go public.
- He waited for a public challenge - which caught great attention - to announce his invention.
Was Edison a surfer too?

• Yes

• But he did not invent the light bulb contrary to the popular belief.

• Lamps were useless without electricity, so he waited for his lamps to be cheap enough for everyday use.

• He started an avalanche of people to use electricity for lighting.
What is «avalanche»?

- It is a cascading series of events that trigger each other like snow rolling down from the top of the mountain.
- Mosaic Browser was an example in 1994 that started an avalanche into the WWW.
- Entrepreneurs try to find the right moment whether for example an invention will be adopted.
- Edison put his money on cheap electricity.
Creativity + Science + Technology = Innovation?

• No. This is called the Silicon Valley Illusion.

• It is about the social process happening in the Silicon Valley today.

• There is no replication of The Silicon Valley.
Then what is innovation?

• It is a historical process.

• If you cannot identify the historical emergence, you simply cannot produce something to enhance it.

• Both Edison’s and Pasteur’s inventions were the fruits of past experiences. They had the ability called «surfing history»
Surfing the waves of possibilities

• They are in every conversation
  • Pragmatic conversations
  • World-opening conversations

• They are in the community. Emotions, moods.

• One can see whether a possibility has many followers.
Possibility Waves

1. The «fulgor». Something bright. An idea that opens up new possibilities.
2. Basic science
3. Applications of basic science principles
4. Products that use concrete applications.
5. Opening new markets.
Avalanches are coming

Peter J. Denning
Today’s technology

- Technology
  - Automating manual work
  - Automating knowledge work

- Computer driven automation
  - More productivity
  - Fewer workers

- Education & Current crisis?
Avalanche

• Higher education system
  • Globalization of markets for faculty and students
  • Tuition hyperinflation
  • Failing values of formal degrees
  • Ubiquity of free content
  • Hot competition

• MOOCs
  • Flipped classroom & ten minute videos

• Universities -> distinctive offers to survive
Future

• Education
  • Prepare people for a fast-changing world
  • Function well in a world replete with uncertainties

• Meta skills
  • Design
  • Entrepreneurship

• Current system
  • Process students to memorize current facts
  • Not seeing much of it as useful in the world (practices, dispositions...)
What to Learn

• Recent years
  • Knowledge -> information
  • Body of knowledge -> curriculum

• Knowledge also includes
  • Perform skillfully
    • Descriptive knowledge (about)
    • Practices (how)
    • Dispositions (which direction to move)
In conclusion

• Accelerating technology
  • Creating greater uncertainty
  • Threatens disruptions of familiar institutions

• An avalanche can come to your part of the computing
  • Best defense is education
  • Pay attention to the knowledge
  • Find mentors to help you learn
  • Lot more time reading to find out what is going in the world
  • Use MOOCs
THANK YOU FOR LISTENING

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