NOTES ON DISRUPTIVE INNOVATION[1]

Richard Bruno

CIRANO

February 2017

[1] Synthesis from various ResearchGate referenced, New Scientist, Economist, HBR, FAZ and EY publications 2015-17 articles.

1. Greatest innovations: Disruptive Innovations?
    a. The last 7 million years:
        i. Projectile weapons 3-4 million years ago: faster than the speediest antelope.
        ii. Raw foods that required a lot of chewing and digesting to break down. That changed 2 million years ago when humans began to control fire and cook.
        iii. Jewellery-Cosmetics: Over 100K years ago how we decorate and adorn ourselves has layers of meaning.
        iv. Clothing: Needle-like objects appear in the archaeological record about 60,000 years ago, providing the first evidence of tailoring. Humans had probably already been wearing simple clothes for many of thousands of years before then.
        v. Containers: About 100,000 years ago, people in southern Africa began using ostrich eggs as water bottles. Having containers to transport and store vital resources gave huge advantages over other primates.
        vi. Trade and Law: Some 10K's years ago trade may have provided the impetus to invent law and justice to help keep people in line.
        vii. Timekeeping about 10K years ago (widely)
        viii. Ploughing about 9K years ago (Euphrates)
        ix. Sewerage about 5K years ago (Indus).
        x. Writing (graphical 100K, abstract 5K (Mesopotania))
    b. The recent past:
        i. 1957: Artificial satellites
        ii. 1965: Kevlar
        iii. 1966: CCTV
        iv. 1967: Home pregnancy test
        v. 1970s: Solar power
        vi. 1974: Personal computing
        vii. 1978: MRI
        viii. 1980: Tamoxifen
        ix. 1985: Portable digital mass-storage
        x. 1993: Automated (internet behind the scenes) collaborative filtering
        xi. 1990s: The mobile phone
    c. The world in 2076:
        i. Machines outsmart us but we're still on top!
        ii. Human-made life forms walk the earth
        iii. Genetically engineered people are everywhere
        iv. Now we can easily make whatever we want (4D printing of everything)
        v. Superconductivity and fluidity everywhere
        vi. The population bomb has imploded
        vii. We fixed the climate

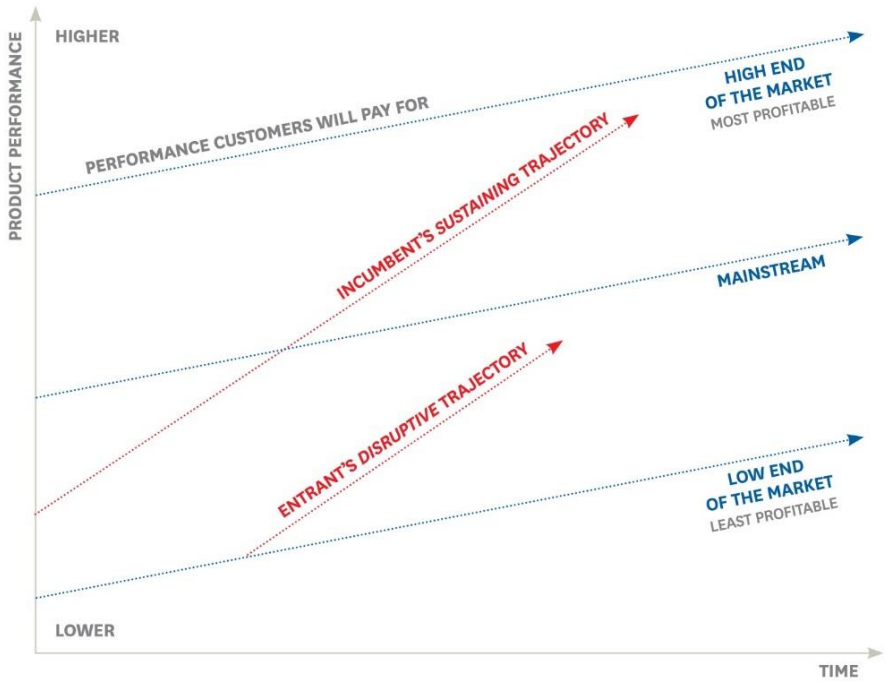
2. Concept of disruptive innovation was introduced in about 1995.

3. EY definition: “Disruption” describes a process whereby a smaller company with fewer resources is able to successfully challenge established incumbent businesses. Entrants that prove disruptive begin by successfully targeting those overlooked segments, gaining a foothold by delivering more-suitable functionality— frequently at e.g. a lower price. When mainstream customers start adopting the entrants’ offerings in volume, disruption has occurred.

4. Disruption theory differentiates disruptive innovations (iPhone) from what are called “sustaining innovations.”(Uber). The latter make good products better in the eyes of an incumbent’s existing customers. For example, both Uber and Apple’s iPhone owe their success to a platform-based model: Uber digitally connects riders with drivers; the iPhone connects app developers with phone users. But Uber, true to its nature as a sustaining innovation, has focused on expanding its network and functionality in ways that make it better than traditional taxis. Apple, on the other hand, has followed a disruptive path by building its ecosystem of app developers so as to make the iPhone more like a personal computer. The limousine or “black car” business is a different story, and here Uber is far more likely to be on a disruptive path. (Note that UberSELECT currently does not include one defining feature of the leading incumbents in this market: acceptance of advance reservations.)

5. It is rare that a technology or product is inherently sustaining or disruptive.

6. Most every innovation—disruptive or not— begins life as a small-scale experiment. Disrupters tend to focus on getting the business model, rather than merely the product, just right. When they succeed, their movement from the fringe to the mainstream erodes first the incumbents’ market share and then their profitability. This process can take time, and incumbents can get quite creative in the defense of their established franchises. The fact that disruption can take time helps to explain why incumbents frequently overlook disrupters.



THE DISRUPTIVE INNOVATION MODEL

This diagram contrasts *product performance trajectories* (the red lines showing how products or services improve over time) with *customer demand trajectories* (the blue lines showing customers' willingness to pay for performance). As incumbent companies introduce higher-quality products or services (upper red line) to satisfy the high end of the market (where profitability is highest), they overshoot the needs of low-end customers and many mainstream customers. This leaves an opening for entrants to find footholds in the less-profitable segments that incumbents are neglecting. Entrants on a disruptive trajectory (lower red line) improve the performance of their offerings and move upmarket (where profitability is highest for them, too) and challenge the dominance of the incumbents.

7. Example: By building a facilitated network connecting application developers with phone users, Apple changed the game. The iPhone created a new market for internet access and eventually was able to challenge laptops as mainstream users' device of choice for going online.

8. Success is not built into the definition of disruption. Not every disruptive path leads to a triumph, and not every triumphant newcomer follows a disruptive path. The failures are not evidence of the deficiencies of disruption theory; they are simply markers for the theory's application. The theory says very little about how to win in the foothold market(s), other than to play the odds and avoid head-on competition with better-resourced incumbents.

9. EY research suggests that the success of any new enterprise (*in the context of an existing company*) depends in large part on keeping it separate from the core business. That means that for some time, incumbents must manage two very different operations. Of course, as the disruptive stand-alone business grows, it may eventually steal customers from the core. But corporate leaders should not try to solve this problem before it is a problem.

10. The theory, supported by 20+ years of data, of disruption predicts that when an entrant tackles incumbent competitors head-on, offering better products or services, the incumbents will accelerate their innovations to defend their business. Either they will beat back the entrant by offering even better services or products at comparable prices, or one of them will acquire the entrant.

11. SOME FIDINGS:

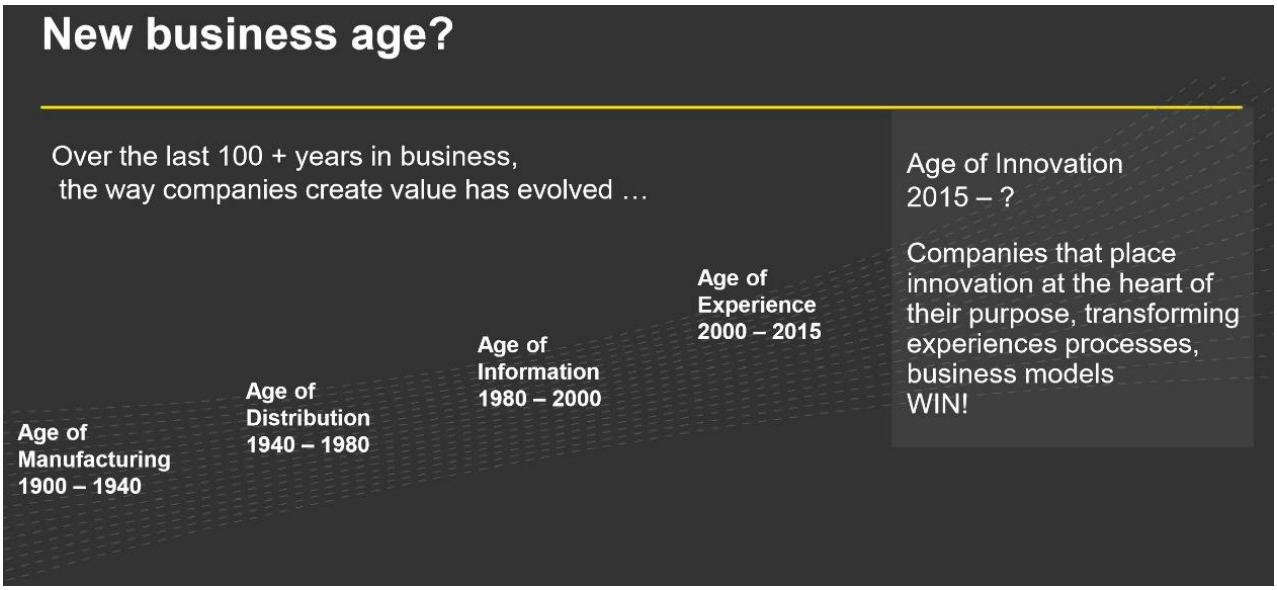
a. Partnership models with rivals and peers and including importantly with SMEs, are helping firms address disruption.

b. FINTECH:

i. Start-ups, spin-offs and challenger firms are looking to disrupt markets today using e.g. crypto-currencies, artificial intelligence (AI) and predictive analytics. Many financial industry executives in the EY survey expect regulatory changes to enable new business models, even in what today are protected areas, such as savings.
ii. Wells Fargo's head of research and development and innovation, emphasizes that the payback the bank seeks from such investments is not financial returns but early access to innovative services and technologies.
iii. Financial institutions, in general, look to achieve change by acquiring such start-ups.
iv. Large banks are also starting to partner with each other to try to stay ahead of potentially disruptive technology-led changes.
v. 87% of EY survey respondents from this sector say people over 60 are likely to be the first adopters of one or more of their products.
vi. An important part of these moves will be regulatory changes and standardization.

c. Management Culture Questions

i. Is your organization communicating its purpose clearly?
ii. Are you looking outside your industry?
iii. Are you fighting complacency?
iv. Can you see disruption coming?



12. The top few approaches that firms are using to collaborate in innovation driven markets include:

a. Crowd sourcing
b. Social collaboration
c. 3-6 month challenges with small entrepreneurial (digital-technology) firms
d. Incubation and acceleration organization

13. Key Organizational Actions

a. Reframe strategic choices
b. Realign the value chain within your ecology
c. Ruthlessly execute to capture value

14. Predicting the Future

a. As systems get more complex, however, accurate prediction becomes more difficult. Long-term weather forecasting, for example, is fearsomely hard. When we think about social change, it becomes harder still. There are far more factors to take into account and they unfold in complex and interacting ways. Linear extrapolation invariably fails.
b. In some circles, extrapolation has given way to exponentialism – the belief not only that what is happening will keep happening, but that it will happen ever faster. Adherents of this view have elevated Moore's law (Moore's law is not a law of nature but a self-fulfilling prophecy that has held because people strived to make it hold.). Accept this and it makes for dizzying outcomes (Club of Rome) in surprisingly short order: with unfathomable consequences.
c. Chose scenarios that look plausible today: indulge in some educated guesswork about what might happen over the next 60 years.