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Revolutionary Innovation – An Elusive Holy Grail for Big Business

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Since the 1990s due to a variety of factors big businesses have been moving away from large central R&D investments and beginning to experiment with new business models and organizational approaches to innovation. However, how best to optimize investments in innovation while staying ahead of competition, especially new entrants, continues to elude big businesses.

Discussions about Innovation are increasingly diverse and often the term Innovation is used to mean different things in different contexts. Booz & Co (1), The Oslo Manual (2), Christensen (3, 4), Chesbrough (5, 6), and Muju (7) they each define innovation and types of innovation from various perspectives, each relevant in its context.

To address the central message of this article we will adopt the three segment groupings based on scope and impact, KPMG (8), dividing innovation spectrum into,

   a) Incremental innovation - high levels of certainty about business environment and typically about making small changes to existing products/services/business models,
   b) Evolutionary innovation - moderate amount of uncertainty regarding business environment and represents extension to existing products/services/business models, and
   c) Revolutionary or Radical Innovation - involving high levels of uncertainty about business environment and represents significant departure from organizations previous products/services/business models and could even lead to industry-level disruption.

Big businesses do well when they nurture and provide the suitable environment for conducting evolutionary and incremental innovations internally. However, various R&D models of post-World War II era have shown that the benefits company derives out of internal revolutionary innovation efforts is spotty at best and rarely sustainable. Well-known internal corporate R&D and innovation centers like AT&T Bell Labs and Xerox PARC have been quite prolific in generating new innovations in post-World War II era and even received a number of Nobel prizes. However, the benefits accruing to the parent company have not been sustainable from a business stakeholder perspective inevitably leading to repurposing or spin-offs of these R&D units.

Bernard Munos (9) comments regarding Big Pharma’s Freshness Index that in 2012 “.. the top 13 big pharma reported the sales of 314 products, representing 79% ($309 bn) of their pharmaceutical sales ($391 bn). ... only 10% of sales from reported products ($32 bn) came from drugs approved since 2007, and only 48% ($150 bn) from drugs approved during the last 12 years, which approximates the effective patent life of medicines. Paradoxically, the majority of sales from pharma’s biggest products ($159 bn) comes from drugs approved before 2001, that are either generic, or about to become so.”
Further, Jim Carroll (10) wrote “big pharma’s 10 biggest companies spent $50 billion on R&D last year. For that sum, they could buy the entire US biotech industry, excluding the top five companies. Yet, 3/4 of all new approved drugs approved came from small biotech labs.”

On the other end of spectrum, boot-strapped start-ups are continuing to upend established corporations even in other capital intensive industry segments like the Telecom industry. Ubiquiti (11) is of particular interest. Ubiquiti’s founder Robert Pera used to be an Apple employee and left Apple to work on his own startup idea out of his apartment and in a matter of years grew to hundreds of millions in annual revenues. How did Apple miss this opportunity? More importantly, why did Apple miss this opportunity? Perhaps it is the Innovator’s Dilemma (4). Perhaps it is a result of the tendency to become risk averse with increasing success (7, 13), the so called Incumbent’s Curse (12).

Ubiquiti-Apple scenario is not a unique example in this recent generation of entrepreneurs. How did Microsoft or Apple, and especially Google with a virtual hold on internet mapping and search, miss the Mobile GPS Application idea that a startup Waze capitalized on. Waze won the Best Overall Mobile App award at the 2013 Mobile World Congress. Within a few years of its existence Waze is now valued close to $1B.

These scenarios with otherwise very successful entrepreneurial companies like Apple and Google further support that even for otherwise entrepreneurial and successful companies, it is often not possible to count on internal innovations and may be better to partner externally or source technologies and ideas from outside rather than trying to develop it all internally.

As a new high growth company bringing successful product or service to market, it often needs to keep an eye on improving the quality and/or features of their first generation offerings as well as try to generate sufficient returns to be able to payback early investors and stakeholders. That automatically puts a burden on their capacity to continually invest in radical innovation and rather focus on incremental and evolutionary type of innovation to generate greater returns for their emerging portfolio. In some ways Ubiquiti and Waze are simply Deja Vuz scenarios where once Microsoft and the Apple in their startup days had similarly upended established companies like IBM and Xerox, and now are beginning to experience the incumbent’s curse themselves.

The evidence continues to point towards continuation of this cycle of rise and decline, and over the long-run historically there is virtually no company that has been able to sustain its leadership position when it comes to radical innovations, even in their own sphere of competencies.

So what is the solution? One usual prescription is to focus on transforming the organization into a more nimble and innovation oriented culture that is continually evolving. The more important question though is, is that really what is needed or appropriate? And if so, to what extent and how to go about it? When it comes to incremental and evolutionary type of innovations the organizational practices, reward systems, and performance management processes should in fact be such as to encourage open minded innovation oriented company culture. However, trying to transform an entire organization for encouraging revolutionary or radical innovation is a losing proposition.
For a big business trying to pursue revolutionary innovation in-house is like having a Clydesdale also compete with Thoroughbreds in horse racing. It may simply not be their internal core competency.

In immediate post-World War II era size indeed mattered and vertical integration was common. Markets were arguably viewed more based on national boundaries rather than global reach. However, in the past quarter century of internet age with an abundance of available information and an easy exchange of ideas there is increased focus on specialization, core-competencies and globalization. Further, in this global market with lower entry barriers and relatively easier availability of financing, innovators are increasing in numbers (7).

Changing the organizational design by setting up multiple R&D centers around the globe is a prudent step for driving local-global aspects to incremental and evolutionary products and services portfolio. However, it still suffers from the same issues relative to revolutionary or radical innovation.

Solution lies in revisiting the basics, the core-competencies and entrepreneurialism.

What big companies need to do is to look at their revolutionary innovation investments through the emerging startup innovator’s perspective (13). An innovator oriented approach to the radical innovation, and instead of necessarily conducting it internally having an “outside-in” orientation with an eye on their core-competencies. There are already millions of outside innovators including, entrepreneurs, startups, contract research organizations, and university office of technology transfer type external innovators conducting cutting edge R&D or testing radical business models that one can source from and develop early stage radical innovations. Revolutionary innovation in the long run is better sourced, managed and perhaps co-conceived externally until it is ready enough to be brought in-house for further development and commercialization.

These outside innovators are likely to be more motivated and insightful on the ideas they have, suggest or are already pursuing. Internal R&D staff will typically look at all radical ideas through their own areas of expertise and organizational constraints risking insufficient insights or personal specialization drift. Also, outside innovators can and will take more risk, primarily because their rewards are directly linked to the success of the idea or innovation they are working on. Further, Big company’s past successes give rise to increasing expectations and a tendency for risk aversion (7, 13) as often the performance management systems become geared towards rewarding consistency in results rather than generating disruptive gains. Internal employees even when very well rewarded will invariably lack that level of direct risk-reward incentive linked to a particular radical innovation that an entrepreneur or smaller innovator has. Further, a Big company’s R&D or innovation group no matter how big will invariably not be able to match the new skills specialization needed over time especially in fast moving technology aspects nor can it induce its internal staff to the level of enthusiasm that exists in millions of new and upcoming entrepreneurs or innovators on a sustainable basis.

In the context of Revolutionary or Radical Innovation we are in agreement regarding some of the Open Innovation (5, 6) type approaches, especially in early stages of the innovation’s life-cycle. However, we are not in agreement with a carte blanche Open Innovation approach, especially for Big businesses.
Where we differ from the Open Innovation type models is that we are recommending Incremental and to a large extent Evolutionary Innovations are best conducted by Big companies themselves. This is based on combination of core-competency and market leadership considerations. Generally incremental and evolutionary type innovations lie squarely in a Big company’s realm of core-competencies and existing successful business models. Also, it is strategically important for a Big company to maintain first mover advantage in their existing space and so incremental and evolution type innovations are more prudent to be advanced internally rather than opening up their near future market launch portfolio to competitors and new startups too soon.

A caveat in the high-stakes radical innovation comes from government funded research and innovation. Government contracts are funded via tax payer funds directly or via military contracts, and tend to be oriented towards “cost+” scenario as the motivation is not to maximize returns rather to maximize benefits to the government or the tax payers. The objective of government funding usually is to invest in early stage R&D that a typical commercial company may not be willing to invest on its own but may be able to commercialize it once basic research looks promising. From a broader societal benefit perspective governments invest in high-risk early stage technology development such as, ARPANET the predecessor to Internet, Hypertext system a precursor to GUI, NAVsat predecessor to GPS, etc. These were eventually leveraged by commercial businesses once the commercial viability became clearer. Such government and/or pseudo-governmental funding mechanism is in fact be an excellent source of early stage radical technologies that commercial organizations can and should leverage, provided they have the ability or desire to comply with additional government regulatory processes and disclosures. Whether such government investments are efficient enough is arguable and not subject of this paper.

Further, we are also recommending looking at innovation not simply as one homogeneous business process but through multiple perspectives, such as in the form of an Innovation Cube. Leveraging the optical similarity to the Rubik’s cube (14) we are proposing to look at Innovation multi-dimensionally in terms of, (a) the innovation spectrum (Incremental, Evolutionary, and Revolutionary), and (b) the three core pillars of innovation in business environments (Technology, Internal Operations & Processes, and Business Models). Technology can be in the context of a new product invention or discovery of new phenomenon by employing formal scientific techniques. More broadly, technology is not exclusively product of science, but also about application of existing technology or scientific know-how to new spheres of applications such as, application of space technologies in medical field. Internal Operations & Process refers to the internal working (the cost side) of a business that allow it to take an idea or proposal and convert it to something that a customer is interested in, whether it is a physical product or a service. Business Model in the classical sense refers to how the company will go about generating revenues and make a profit leveraging its Internal Operations & Processes and Technology. Organizational structure or organizational design is an aspect that could be viewed as either part of Internal Operations & Processes or the Business Model, depending on its context. For example, if used in the context of setting up global R&D or Engineering centers as back-office say in India or China primarily for purpose of servicing the parent company say in US or EU, then this organizational design would be a part of Internal Operations & Process as it is primarily cost or resource centric. On the other hand if such global centers have independent revenue mandates then this organizational design may be
viewed as part of the Business Model. So while the Business Model and Internal Operations & Processes must work synergistically the former is oriented towards revenue generation aspects while the latter towards cost centric aspects.

In closing, similar to how one can rotate the Rubik’s cube in three dimensions, we are proposing visualizing rotation of the Innovation Cube facets to mix-n-match and arriving at a holistic innovation landscape that is most relevant and optimal for the company. Most Big companies do not need to or for that matter have the capacity to be working on Radical innovations in all its ramifications. By definition the Big companies have become “Big” because they have been successful at certain things and have developed certain core-competencies. This Innovation Cube is a visualization tool that we offer to help refine the strategic vision for the company in conjunction with our recommendations regarding ways to source, develop and leverage radical innovation versus Incremental/Evolutionary innovations. A novel and structured approach to the broad innovation landscape, while keeping an eye on company’s core-competencies, organizational development, and future market leadership aspirations.

The Innovation Cube (© Sandeep Muju, 2013)
About the Author:

Sandeep “Sandy” Muju, has a diverse and seasoned international leadership experience spanning virtually the complete business value chain. He has experienced various executive leadership roles at Fortune 500 companies as well as been an external Advisor to several Fortune 1000 companies and a public speaker on the topic. He has delivered several invited talks on the topic including, at SAE Aerotech in 2011, Conference Keynote Speaker at ETME 2012, a Semiconductor industry panelist at ISA Vision 2007, and is already an invited speaker on the topic of Innovation at some future events. He obtained his PhD in Applied Mechanics as well as an MBA with a focus on Strategy and Global Leadership. He has received several awards including, R&D 100 Award, Patent & Trade Secret Awards, and has published numerous times in reputed journal, magazines and conferences. He also has extensive experience in Business Excellence (Malcolm Baldrige, EFQM, RBNQA) and Six Sigma (DFSS, FASTER, Lean). Presently he is the Principal of Innovative Business Transformation (IBT) and is working with global companies regarding their Innovation Management strategy among other things.

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