

REVERSE INNOVATION

DISRUPTIVE MINDSET CHANGES IN PRODUCT DEVELOPMENT

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INTRODUCTION

In today's competitive world, companies are searching for deep and meaningful changes instead of shallow, superficial ones to help them sustain growth and gain crucial competitive edge. Clayton Christensen coined the term "disruptive innovation" in many of his influential books, precisely describing the type of innovation that would bring about these radical changes. Since Christensen published his article *Disruptive Technology: Catching the Wave* in 1995 (co-written with Joseph Bower), many scholars and business journalists have contributed to the development of the theory of disruptive innovations and disruptive strategies. They have become common in our conversations while discussing design strategies as well.

In recent years, another type of innovations that share many of the characteristics of disruptive innovations, has started to receive more attention. Vijay Govindarajan and Chris Trimble (Govindarajan & Trimble, 2012) describe this new phenomenon in their book *Reverse Innovation*, as the innovation that originates in developing countries and subsequently flows uphill to the rich countries. They name it "reverse innovation" and call for a "clean slate" approach to develop new solutions for the developing world, rather than merely making the products more affordable. Arguably, due to their high growth potential and enormous size, emerging markets will shape how the world will become in the future. China, for example, is a country with rapidly growing wealth and a huge market because of its 1.3 billion consumers. Its higher education system also churns out creative professionals at a record speed. Understanding how successful innovation is and will take place in these emerging markets is crucial for any multinational business. Many of these new products have the potential to be disruptive as well.

Reverse innovation has serious implications for our industrial design profession. We are designing for a global market nowadays. Cultural barriers can only be overcome when business and designers change their mindsets and start seeing the gaps of needs between the emerging markets and the rich world. One must also understand the variability of needs within a given culture. For instance, anyone who has done business in China would quickly realize that this seemingly homogenous market is full of subtle cultural and geographical differences that are almost too complicated for outsiders to completely comprehend. An advertising campaign aims to capture a certain demography in all Chinese markets is destined to fail, so is a new product that has the same ambition. One simply cannot capture market share in these markets without thoroughly understanding their unique needs. The same cultural barriers apply to designers working in these emerging markets who are seeking to gain entry into western markets, they also need to be aware of these gaps in their design.

In this paper, we aim to examine the linkages between reverse innovation and disruptive innovation using case studies. This paper also initiates a framework for designers who are interested in creating reverse innovation. There are plenty of future research opportunities in this new area.

REVERSE INNOVATION VS DISRUPTIVE INNOVATION

Reverse innovation and disruptive innovation are not mutually exclusive. They are similar in many aspects.

- Firstly, they both often start from the bottom of the business, in other words, the marginalized markets, where profit margin is low;
- Secondly, they both take drastically different approaches compared to the current models, be it the technological models or business models;
- Thirdly, both of them are often unnoticed and ignored by the mainstream business until they surprisingly erode their customer base.

There are also noticeable differences between these two types of innovations. Unlike most disruptive innovation, reverse innovation is not necessarily associated with new technology. Though disruptive new technologies emerged in developing countries sometimes do drive reverse innovation (as shown in the case studies section below), reverse innovation does not rely on new technology to innovate. In addition, disruptive technologies are often immature when they first emerge and perform poorly compared to the mainstream technologies. Some reverse innovations actually are century old methods rediscovered and simply packaged for a new or modern use. Govindarajan and Trimble gave a vivid example of Gatorade, which was originated from an ancient treatment in Ayurvedic medicine for dehydration (Govindarajan & Trimble, 2012).

Nowadays people in developing countries have almost the same access to technological information as people in the developed world. The new technology can be used in very different ways. For instance, the Chinese version of Twitter, Weibo, has the same limitation on characters that you can tweet at one time, but since a Chinese character (a pictographic language) holds more information than Roman alphabetic languages such as English, in the same length, much more information can be conveyed by Chinese in one Weibo (tweet). This difference helps shape the contemporary Chinese dialogues in many creative ways.

Reverse innovation often stems from particular needs of people in developing countries. These needs have strong cultural implications and often are not obvious or even relevant in other countries. A case in point is ChotuKool, a refrigerator designed by Godrej and Boyce for the Indian rural market (Govindarajan & Trimble, 2012) (Munuswamy, 2009). This product's cooling function is much worse than any refrigerators that consumers in developed parts of the world are accustomed to using in their households, but it is insulated extremely well and can run on battery, which is crucial for areas that do not have a stable supply of electricity. It is also much cheaper than its western counterparts, costing only about \$69. Are there any break-through technologies used in this product? Not really, because it simply takes advantage of matured, existing technologies. Is this something for the underserved people in India? No

doubt! The courage and willingness for this company to develop a product for the bottom of the pyramid of the market is admirable. Will this product be valuable to a Western household? Hardly. But can this product inspire something for the recreational outdoor and camping market elsewhere? It very likely could. If any Western companies take notice of this innovation and utilize it in their design, then that would be a perfect example of “reverse innovation”.

Now that we have discussed some of the differences and similarities between disruptive and reverse innovation, we will show a few examples of reverse innovations.

CASE STUDY: DESIGN FOR EMERGING MARKET BY MULTINATIONAL COMPANIES

Ten years ago, Chinese market for disposable diapers was almost non-existent. Proctor & Gamble had to innovate when they were trying to introduce their Pampers brand diaper to the Chinese market. Partnered with Continuum, a design consultancy, their research showed what many Chinese knew all along: there are several cultural reasons for Chinese consumers’ reluctance to use disposable diapers. For centuries, Chinese infants have been wrapped in cloth diapers. They also wear open crotch pants before they can even walk. “Potty training” is a foreign concept to Chinese parents since Chinese toddlers learn quickly that it is uncomfortable to pee in one’s pants. Chinese parents are also suspicious about the ventilation of the disposable diapers and its rash inducing effect on their baby’s sensitive skin. Price is of course another issue because the cost of one disposable diaper is often equal to that of a breakfast meal in China. Researchers at P&G came up with not a watered-down version of its Western product, but a new product that address all these cultural perceptions of diapers. New materials were used in the Chinese version of Pampers to make it thinner and softer than its American version. They are also sold at half the price. No doubt, the innovations created for the Chinese market will flow “uphill” to be incorporated in diapers in the rich countries because they fill a few universal market needs.

More noticeably is their advertising campaign, which focuses on a universal need for all parents: a good night sleep for their babies and themselves. German photographer Bernd Hagemann created a series of photos titled: “The Sleeping Chinese” (Hagemann, 2010), in which Chinese from all walks of life sleep in various odd places and positions. This does not mean that Chinese are lazy, but it certainly does show how many Chinese are sleep deprived and have learned to sleep just about anywhere. Since the 1950s, most Chinese parents both work. Working parents of newborns are more sleep-deprived than most. With this important benefit to working parents in mind, Proctor & Gamble did not put millions of dollars to try to convince Chinese parents to use diapers 24/7, but only focused on the night time use of diapers. The image of a soundly sleeping baby struck a cord with many Chinese parents and the new Pampers practically created a new market for itself. This is a perfect example of how a culturally sensitive company can create emotional connections with their consumers while also making their products commercially viable.

CASE STUDIES: DESIGN FOR EMERGING MARKET BY LOCAL COMPANIES

Many countries are facing a severe social problem: a rapidly growing aging population. Chinese people have an enviable life expectancy, but the country is struggling to face the reality of an aging society

because of its large population and decades of tightly controlled population policies. New consumer electronic designs seldom address older users' unique needs. Newplan is a Chinese design consultancy that came to prominence after they launched the first mobile phone specifically designed for the elderly in 2010, Arcci. Their newest generation, Arcci S900, won the IF Design Award in 2013. It is unique because combines the communication function and the hearing aid function together in one mobile device. While it incorporates obvious form factors associated with products for the elderly, such as large buttons and fonts, intuitive interface, etc, Arcci S900 still remains in a fashionable black color with sleek surfaces. The earphone/hearing aid uses a flat wire instead of a round one to avoid entanglement with other small objects such as buttons on clothing. It is also equipped with an emergency button on the back and comes with a desktop charger. This product demonstrate that insights could be obtained by thorough research on users. These mobile phones do not have the flashy new functions of the smart phones and are priced much lower (around ¥1,000, about \$150). The marketing scheme is also culturally astute. These cell phones are being promoted to younger generations as gifts to their parents and grandparents. This innovation could be easily adopted in other countries and also potentially disruptive.

Another example addressing this aging society problem that is of extreme importance to Chinese society is CAREase, an inductive adult diaper design that was nominated by the Wall Street Journal for its 2012 Asian Innovation Awards. This design was developed by Ckicom Technology Limited, a Hong Kong company focusing on the elderly care market. Each "CAREase" Inductive Diaper has incorporated a pair of unique conductive printing to detect the Diaper's wetness condition. With complementary wireless transmitter and receiver, the data collected by the sensor can be sent seamlessly to the computer management system which is also equipped with a smart phone application that enables remote monitoring. It also records the incidents for medical purposes. No doubt it will improve the quality of life for bed-ridden patients anywhere. It also helps to solve the labor shortage problem in nursing and long term care, a common problem in China as well as other parts of the world, by greatly reducing the workload of the caregivers. This should also be considered a dignified way to help reduce the stigma for the elderly patients, who no longer need to be reminded of their conditions by having to repeatedly call the nurses every time they are in need.

For the younger generation, Aftershokz, an open ear headphone brand distributed by Voxlinc, is an excellent example of disruptive innovation. Voxlinc is an arm of Voxtech, a Chinese company based in Shenzhen. Voxtech originally developed the bone conduction technology in 2001 for military use. Most ear bud and headphone designs, like Apple's new Earpods, focus on ergonomics. Apple scanned thousands of peoples' ears, to obtain the best form for the perfect fit. Voxtech's innovation, however, completely turned this model on its head by eliminating the need to fit into any ears. The bone conduction technology is based on the fact that sound waves can get to the inner ear through direct vibration of the bones in the head, which carry the vibrations directly to the inner ear, bypassing the eardrums. Unlike Jawbone's NoiseAssasin technology, Voxtech's technology does not attempt to reduce the background noise, instead it allows the users to hear what is going on around them. It reduces the potential danger for users such as urban runners who might be too isolated from their environment while using headphones. Interestingly, even though it has not been commercialized in China, Aftershokz is being marketed in the US as a sports headphone. Pricing at the same level as Jawbone's headphones, Aftershokz cannot

compete in the Chinese consumer electronics market. Therefore, it must find a new market elsewhere. Thus, it does not fit into the reverse innovation concept completely, but it is an interesting example for disruptive technology developed in a developing country and flowed uphill to the developed world.

RESEARCH SUGGESTIONS

It is a common understanding that ethnographic research is an important research approach when seeking business opportunities for emerging markets. This does not mean that one should spend all its resources scouring the country for disruptive technology. The focus should be on gaining a meaningful understanding of the real needs of the target group within their cultural context.

As Luke Williams points out (Williams, 2010), there are five stages in disruptive innovation process:

- Craft a disruptive hypothesis;
- Define a disruptive market opportunity;
- Generate several disruptive ideas;
- Shape them into a single, disruptive solution;
- Make a disruptive pitch that will persuade internal and external stakeholders to invest or adopt what you've created.

Seeking reverse innovation opportunities could follow similar stages. However, due to the differences between disruptive and reverse innovation discussed above, we make these suggestions for researchers:

- Traditional qualitative research methods such as observation, interview, and survey will NOT yield sufficient data to generate meaningful insights. An immersive research approach must be utilized. This means the researchers must participate in the actions and go through the routines themselves. Life blogging hardware such as Memoto (as seen on Kickstarter) and auto/mobile ethnography apps such as Ethosapp (www.ethosapp.com) make this approach more feasible than ever before.
- The research team must be comprised of people who are sensitive to both cultures. After all, "similar people with similar cultural backgrounds tend to create similar products (Ridderstrale & Nordstrom, 2007)". Finding and reversing clichés in any culture requires a critical mind that is not easily blinded by daily routines. In addition, reverse innovation requires a thorough understanding of the culture and its people. This kind of researcher is rare. But employees of business working in the emerging market could be recruited to serve as field agents, and trained in the immersive research methods. The data could then be analyzed by a selected team of researchers with requisite multi-cultural background.
- When doing research in a lab setting (interviews with controlled variables), questions and tasks should be repeated with multiple groups of people with distinct cultural differences to make comparisons and gain insights. The goal is to capture the full range of behavior and preferences of the target group.

CONCLUSION

The ultimate goal of reverse innovation is to create innovations to capture the growing markets in different cultural settings, and then use the insights gained and products developed as a resource to develop new products for matured market elsewhere. However, as Donald Norman stated in his commentary to Clayton Christensen's recent work (Christensen, 2013), disruptive innovation strategy is easy to understand in theory, but extremely difficult to implement in practice (Norman, 2012). His point is that businesses do not have the benefit of hindsight to identify disruptive technology. As the result of Christensen's own research, disruptive innovation is often inferior to the mainstream models when it first emerges. There is therefore little incentive for established business to adopt these new innovations or to recognize them as potentially disruptive threats to their market share at the beginning. While at the same time, as Luke Williams and many other business and design leaders have observed, successful companies operating in mature industries tend to try to keep their successful business models, and are unwilling to take disruptive risks (Williams, 2010). As many authors wrote about disruptive innovation have pointed out, coming up with good ideas and selling them to the investors are two different matters. Reverse innovation faces similar challenge. Both the market share and the profit margin of innovations for the under-served could seem so small for the multinational businesses initially, it is not possible to push the reverse innovation up the management hierarchy and gain any footing.

But as the book *Funky Business* states, "Traditional roles, jobs, skills, ways of doing things, insights, strategies, aspirations, fears, and expectations no longer count. In this environment, we cannot have business as usual. We need business as unusual. We need different business. We need innovative business. We need unpredictable business. We need surprising business." With the emerging market at stake, reverse innovation demands a change of mindset.

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