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Article

January 2009

Patent or Perish: Why your Innovation can be your competitor's free lunch

Sidney G. Winter, in his book titled *Wharton on Managing Emerging Technologies*, enumerates four ways to protect and profit from innovation: get an early lead, control complementary assets, keep secrets, and own patents [Ref 1]. In the book, he downplays the importance of owning patents, and questions the effectiveness of this strategy, especially in traditional industries.

However, some of the strategies that Winter suggests have their own shortcomings. Keeping secrets is difficult: flow of human capital and reverse engineering are common tools firms use to thwart competitors. Complementary assets, such as access to distribution channels, service capabilities, customer and supplier relationships, and related products do help the innovator, but cannot be relied upon when competitors often possess the same assets, or if the innovator's assets are confined to specific geographies. Winter considers lead time to be the most powerful tool for appropriating gains from innovation, especially in the auto industry. When an innovator has the 'first mover's advantage', he/she gets an 'exclusionary' benefit of locking out competitors, until they can catch up, develop alternate products, or even work around patents.

However, the first-mover advantage can wither away with time due to several reasons. This could include product delays, launch snafus, or insufficient capacity to meet heightened consumer demand stoked by advertising blitzkrieg. Therefore, the most reliable, sustainable, and potentially wide-reaching method for profiting from one's innovation is by owning patents that protect innovation. Patents exclude competitors from imitating and benefiting from the innovation, and can be filed practically anywhere the product is intended to be manufactured or sold.

Indeed, one of the best ways to sustain and profit from the first-mover advantage is to own patents that will slow down the emergence of competitors and rival products. Furthermore, this ownership gives a legal standing to the innovator who can move the courts in order to enforce these Intellectual Property (IP) rights.

The usefulness of patents for protecting innovation in cutting-edge industries, such as biotech, pharmaceuticals, and semiconductors, is well accepted. In this article, we examine the efficacy of the strategy, or the harm caused by the absence of one, by reviewing two 'traditional' products: the shoe and the automobile. The first is an analysis of what did go wrong, and the second is an analysis of what can potentially go wrong.

Case Studies of the Crocs Shoe and the Nano Car

When funny-looking foam shoes known as "Crocs" first went on sale in 2002, few realized that they would become the success they are today [Figure 1]. Sales at the Colorado-based (US) Crocs Inc. grew spectacularly from US $24,000 in 2002 to $850 million in 2007. These colorful, odor-free, dishwasher-safe shoes were even said to have inspired the nose design of the Chinese-made Chery S16 compact car [Ref. 2]. People could not get enough of them – they came in different shapes and sizes, and with different accessories to adorn and customize them. The funny-looking footwear that initially elicited stares and snickers had suddenly become serious business.

Figure 1: The Crocs Footwear

Image Source: http://pixarplanet.com/blog/cros-to-release-walle-inspired-footwear , Copyright © Pixar Studios

The Tata *Nano* is certainly no funny business. The unveiling of the ultra-low-cost car (for approximately $2,500) by Tata Motors in January 2008 catapulted the image of the company, and ignited people's interest in the very concept of cheap cars [Figure 2]. This forced other car companies to either announce plans to build their own low-cost models, or to scoff at the idea by proclaiming that the *Nano* may be eco-unfriendly, unsafe, or just unviable [Refs. 3, 4, 5 and 6]. However, at home in India, the *Nano* has been hailed as a model of ingenuity, innovation, and collaboration.

The fact is that both the *Nano* and the Crocs shoes are serious business with high stakes and the requisite boardroom drama. Crocs are a fashion fad that may eventually go the way of penny loafers and swatch watches. The *Nano,* on the other hand, was born out of necessity, and as an answer to the prayers of Indians who now drive two-wheelers on potholed streets and have been looking for a frugal alternative to transport their families safely and nimbly

Figure 2: The Tata *Nano*: the cheap and stylish car for the masses.

Image Source: http://www.businessweek.com/innovate/NussbaumOnDesign/archives/2008/01/indias_new_car.html

After selling more than 50 million pairs of colorful shoes, Crocs may already be a spent force. The company's stock is at a historical low, having lost 98 percent of its peak value. Can the past successes and the present challenges faced by Crocs teach the makers of the *Nano* a business lesson or two when it comes to innovation, consumer safety, and competitive positioning?

Crocs' travails can be examined to see where they can be applied in the case of the Tata *Nano*. By distilling some important takeaways from the analysis of Crocs, we can surmise the lessons that the makers of the *Nano* could learn.

Success breeds countless clones

One of the main reasons behind the mighty fall of Crocs is the wide availability of cheap knockoffs. These imitator clogs are sold for less than a quarter of the price of the originals through discount retail stores such as WalMart [Ref. 7]. Crocs would like to eliminate these knockoffs from its primary markets, but it does not have the adequate patent protection to do so. Patent rights would have allowed Crocs to exclude these imitators from making, using, or selling these knockoffs.

Safety first

Several safety-related lawsuits have been filed against Crocs Inc. for escalator accidents involving children wearing Crocs. [Ref. 8] The Swedish government has banned the use of these shoes in hospitals because they accumulate static electric charge that interferes with sensitive medical equipment. The Japanese Trade Ministry has also expressed safety concerns and has asked for a redesign of the basic footwear.

There is no substitute for safety. Whether footwear or autos, products that take safety credentials into consideration command superior price, brand recognition, and respect. The cost of neglecting safety issues can be expensive, and any resulting incidents that can be attributed to such neglect can result in expensive lawsuits.

Hype cannot substitute for innovation

Crocs Inc. is accused of being low on innovation and high on hype. Analyst puffery saw the company's stock triple in the first 10 months of 2007. Although patents are not a proxy for innovation, they do send a strong signal that the company's novel and patentable ideas are protected by patents, which enables the company to exclude competitors and imitators from using these ideas until these patents expire. Crocs' patents are considered by many as weak and indefensible.

Patent quality is more important than patent quantity

Patents are not a number game, or even better, they should not be. Patent quality is what counts, although defining high quality patents has never been easy.

The validity of Crocs' US design patent, covering its key product, is questionable: if the differentiating feature of the design, a shoe strap, was functional rather than ornamental, the patent would likely be invalidated [Ref. 9]. In December 2007, one of the company's key registered community designs was invalidated by the European Union's Office for Harmonization in the international market for lacking individual character [Ref. 10].

Litigiousness does not come cheap

A large portion of Crocs' cash has been expended in fending off competitors and imitators. It is a litigious company and has moved the International Trade Commission (ITC) several times to block competitors and force smaller companies to settle. Simultaneously, Crocs Inc. has been sued for patent infringement by a New York-based foam maker, Cellect LLC [Ref. 11].

In addition to patent litigation being a costly affair, when a patent-related lawsuit is filed against a publicly traded company, the share price almost always drops. This is sometimes referred to as the "hidden" cost of patent litigation [Ref. 12]. In the case of Crocs, patent infringement lawsuits may have influenced market sentiment and hurt the stock price.

Shareholders can be unforgiving

While shareholders can be exceptionally rewarding when they see new and innovative products or services or a management team with vision, they can also be punishing when they see erosion of stakeholder value and performance. Even if a company rides high on its unique products that become runaway successes, it does not take much time or miscalculation for the wind to blow in another direction. Crocs has seen its share of shareholders' wrath: there is pending litigation from shareholders who allege insider trading in Crocs' shares, especially since insider sales in 2007 were $200 million and insider buys were zero [Ref. 13].

Enter the Nano

Unlike the Crocs-inspired Chery S16 compact car, the Tata *Nano* is a smart-looking car that has been described as "natty" and "cute" [Ref. 14], but is it innovative? Is this innovation sufficiently protected by patents? How can the carmaker avoid the mistakes and pitfalls that have plagued Crocs Inc.?

The *Nano* addresses the ultra-low-cost car segment with a product that looks well designed, reportedly conforms to safety and environmental standards, provides good mileage, and promises good value for money. Its launch whipped other carmakers into action; the first-mover advantage it gave Tata Motors was formidable. It would take other manufacturers years to catch up. The basic model of the *Nano* is roughly half the price of the cheapest cars in this category — China's QQ3Y Chery and India's Maruti 800 [Ref 15]. Only 0.8 percent of the Indian population own a car, as compared to 30 to 50 percent in western countries; a price tag of $2500 makes the *Nano* affordable for many people at the bottom of the pyramid [Ref 16].

The *Nano* seems to have introduced some innovative features. It has a two-cylinder rear-mounted petrol engine connected to a single balancer shaft; it is more compact than the Maruti 800, yet offers 20 percent more seating space. Further, the modular design makes it possible to significantly save on distribution costs. Rather than shipping the fully assembled car, various components of the *Nano* will be distributed separately to dealer locations, where the car will be assembled locally.

Are Nanoclones far behind?

Clearly, the *Nano* is a pioneer in the ultra-cheap car segment. But can it sustain this first-mover advantage to fully exploit the commercial opportunity in the years ahead? The answer lies in its success in fending off competitors and imitators.

One of the most important ways to protect innovation is through ownership of Intellectual Property (patents, trade secrets, etc.) rights. In the automobile industry, trade secrets are not of much use; a trade secret can be revealed through reverse engineering — a common practice in this industry. Further, the free flow of human capital often fails to confine expert knowledge to one organization. In contrast, patent protection offers exclusionary rights that prevent competitors and imitators to make, use, sell, and import the patented product.

Tata Motors has reportedly filed many patents related to the car's innovative features [Ref. 17], but the success of the *Nano* will be determined by a number of factors that should be examined in greater depth.

Lack of a global patenting strategy

Exclusionary rights accorded by patents are limited to specific countries where the patent is filed because there is no 'global' patent. Therefore, an innovator with a sound business strategy would file patent applications in all countries or jurisdictions where the product may be manufactured or sold.

It is quite likely that potential competitors for the *Nano* will neither manufacture nor sell in India. There is a huge untapped global market potential for an ultra-low-cost car (e.g., most of Africa and South East Asia). Tapping this potential requires a patent strategy that is equally global in its reach. With the emergence of low-cost manufacturing destinations, such as Vietnam, and with double-digit inflation putting its brakes on the economy, India cannot lay claim to being the only preferred place to manufacture the *Nano* [Ref 18].

The consultancy firm, A.T. Kearney, reports that by 2020, approximately 16 million low-cost cars will be sold worldwide annually. By the year 2020, the potential customer-base for a car with an approximate price of $3000 is about 390 million people [Ref 19]. Such cars are also expected to have nano-thin margins; in fact, carmakers would be forced to have lean distribution strategies, which will still fetch around 10 percent gross sales margins. This would imply that manufacturers would have to squeeze every ounce of advantage in order to boost the bottom line including moving manufacturing or assembly to low-cost geographies.

An examination of Tata Motors' history of patent filings reveals that the company files few patent applications outside India [Ref 20]. More specifically, in the last 20 years, it has twelve Patent Cooperation Treaty (PCT) applications and two published patent applications in the United Kingdom;furthermore, it has no published patent applications in any other jurisdiction, including the United States and European Patent Offices.

Tata Motors' ambitions of manufacturing and selling the *Nano* outside India will be impacted by its global patenting strategyIf there is no protected innovation due to the lack of IP ownership, it would clearly weaken the lead time advantage that Tata Motors has over other auto companies. It also opens the possibility of competitors filing patents (especially because most countries in the world follow the first-to-file, rather than the first-to-invent, system) in jurisdictions outside India. This can hinder the plans for manufacturing or selling the *Nano* in these geographies.

An effective technique for obtaining patent protection in selected geographies is to file a PCT application for every patent application filed in India, and then go to the 'national phase' in each country of interest. However, there is a deadline of 12 months for filing a PCT application after the first filing in India. Tata Motors should embrace a strategy of filing globally through this PCT route, and then carefully choosing the jurisdictions that it files national patents in. This patenting strategy should be in sync with the global expansion plans for the sales and manufacture of the *Nano*.

Quality of patent applications may be questionable

Filing weak, extremely narrow, or low quality patents usually works against their owners. Such patents disclose innovative features to potential competitors, and provide an illusion to the owner that the technology is protected by the grant of such patents. A patent application should be drafted to prevent the competitors from imitating or working around the innovation that the filer seeks to protect. This is the reason why patent drafting work should be undertaken only by professionals with proven expertise and a good track record.

It is not the quantity but the quality of patents that usually determines the value of a company's patent portfolio [Ref. 21]. The most important part of a patent application is the 'claims' section, which defines the boundaries of IP protection. One good practice is to include both broad and narrow claims in the patent application. Broad claims may only cover the essential elements of the invention, but should also cover all possible – or as many as possible – embodiments of the invention, including future variants. Narrow claims should describe the invention in more detail, and include more elements and limitations than broad claims. Hence, broad claims would offer wider protection to the patent owner, and competitors would find working around these claims to be more difficult if not impossible. However, it is more difficult to get broad claims allowed by the patent examiner, since there is a greater likelihood that these claims overlap with some prior art (defined as the pool of knowledge, patent and non-patent, which is used to test the novelty of the innovation). Overly broad claims, however, stand a risk of being invalidated or opposed later, even years after the patent grant.

Although an examiner may allow narrow claims more easily, they offer little protection to the owner, and provide more risk because of the likelihood of competitors working around them.

An examination of some of Tata Motors' patent applications with the Indian Patent Office reveals that these applications do not have the right mix of broad and narrow claims. For example, Tata Motors' patent application relating to "assembling methods of car components such as with the use of adhesives and mechanical fasteners instead of welding" (Application no. 2176/MUM/2007) seems to have claims that may be quite narrow. On the other hand, the claims of another patent application (no. 574/MUM/2007) seem too broad.

Comprehensiveness of the patenting strategy

To protect its innovation and maintain a competitive edge, Tata Motors should devise a comprehensive patenting strategy to cover innovation that goes into making, distributing, and selling the *Nano*.

The first step is to assess the patentability of various products and processes that go into manufacturing the *Nano*. Novel methods of distributing, selling, servicing, recycling, and disposing a product may also constitute patentable subject matter. Therefore, the company should consider patenting innovation in the *entire life cycle* of the product.

For critical products and core technologies, it is important that all the aspects of innovation are comprehensively covered in the patenting process. In addition, engineers who work on the technological innovation should actively pursue potential variations that competitors may use to work around the core patents and file these as satellite patents, i.e., use a picket and fence strategy. This would effectively pre-empt copycats and plug the gaps that may otherwise make core patents vulnerable.

Another important strategy is to view patent protection as a process that evolves with the product, and hence the owner should continuously file new applications as the technology evolves or when new variations are found. Such continuous innovation can be protected either by new or "continuation" applications that partially claim the filing (priority) date of a parent application. Such a strategy recognizes technological innovation as a continuous

process, and accounts for incremental and functional modifications as well as improvements that go along with product development.

Although the innovation in Tata Motors' *Nano* seems to be covered by at least 35 patent applications filed at the Indian Office, no comprehensive patenting strategy seems to be emerging from examining its published applications. For example, no patent protection has been sought for the overall design structure. In addition, these published patent applications do not encompass the entire manufacturing process, although some key processes, such as assembly of components, have been claimed in these applications.

Preempting Safety and Emissions Concerns about the Nano

According to a press release from Tata Motors, the *Nano* conforms to all the required safety standards; however, scant details have so far been disclosed in this regard. Tata Motors should benchmark the *Nano* with other cars in low-cost and ultra-low-cost segments. It should use independent labs such as the Euro NACP to rank the car for different safety parameters (such as crash worthiness). This will go a long way in providing a good rebuttal to skeptics, while assuring people of its safety and emissions performance — lest they may attribute the car's low sticker price to compromises made in these areas. In fact, the Tata *Nano* can actually turn the tables on many – if not most – competitors by proving that this car is at or near the best-of-the-class in safety and emissions. Furthermore, it can come up with a CNG (compressed natural gas) version of the car at an attractive price point. Since the price of CNG is less than a quarter of the price of gasoline in many markets, such a variant would provide a huge incentive to people who want to save their operating costs, and would also help in reducing carbon-related emissions. Working with the local government to provide incentives and tax breaks may also help in partially offsetting the cost of converting it into a CNG-based car. By the way, even in developed economies, such as Utah (USA), tax breaks are offered for CNG conversion of gasoline-powered cars. [Ref 22]

Prepare to slug it out

The recent patent litigation between Bajaj Auto and TVS Motors and its outcome has shown that patent litigation is an expensive affair even in India. In this case, TVS Motors lost and had to bear a production and sales loss of more than a billion Indian Rupees, i.e., approximately US $20 million [Ref. 23]. In the United States, the cost of fighting a patent litigation could easily exceed US $6 million, and the penalties and fines imposed by the courts could be several orders of magnitude more (than in India). Furthermore, the company may have to deal with patent infringement lawsuits in countries in which it manufactures or sells the *Nano*. Its competitors may actively try to invalidate its patents on various grounds, such as obviousness or lack of novelty. Such litigation and invalidation proceedings can be a huge cost to the company. The stock markets usually perceive patent litigation against a company as a threat to the company's future earnings, and this sentiment is usually reflected in the stock price of publicly listed companies.

Tata Motors should have both offensive and defensive components in its IP strategy. It should file patent applications and aggressively pursue infringers of its patented technologies. At the same time, it should conduct a comprehensive patent portfolio analysis of its competitors, and try to license or cross-license patents that it may itself require for its current and future versions of the *Nano*.

By making upfront investments in patenting all aspects of innovation in the *Nano*, drafting good quality patents that are filed in all jurisdictions of interest, and performing 'clearance' searches to see if it is infringing on competitors' patents, Tata Motors can respond better to potential future threats. If such freedom to operate searches uncover that Tata Motors is

indeed infringing on other's patents, it would need to redesign or re-engineer the product, or change its processes, or would have to in-license the corresponding patents.

Conclusion

Since the beginning of 2008, the share price of Crocs has fallen by 97%. Its shares lost half their value just in March 2008. The U.S. Consumer Product Safety Commission reported 77 "soft shoe" entrapments on moving escalators since January 2006, and issued a warning in May 2008 [Ref 24]. Furthermore, Crocs is fighting an uphill battle with a flood of imitators [Figure 3]. Bloomberg reports, "the widespread availability of both Crocs … and their imitators is one of the company's biggest problems, according to [retail analyst Keri] Spanbauer." "It's not only that Crocs are everywhere," she said, ``the knock-offs are everywhere.'' [Ref 25]

The *Nano* was expected to go on sale in India in October 2008, but the launch was delayed to March 2009 due to political protests at its manufacturing plant [Ref 26]. Competitors and imitators worldwide will watch the *Nano*, and will use every misstep of Tata Motors to their advantage. The purported first-mover advantage of Tata Motors can easily be dwarfed by the experience and distribution platforms of seasoned competitors, who also dwarf Tata Motors by their global reach, revenue streams, and the strength of their patent portfolios [Ref 27].

Figure 3: Fake Crocs on display for sale

Image Source: www.flickr.com/photos/janegoth/485627525/

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