



ARTICLE DIGGING, PATENT/RELATED RIGHTS

Patent races: pros and cons

By [Paul Belleflamme](#) 29 October 2013 58

We have already developed on this blog the relationship between competition and innovation (see [here](#) and [here](#)). This relationship goes both ways. On the one hand, competition affects innovation insofar as the firms' incentives to innovate depend (in a complex way) on the market structure (i.e., the number of firms on the market, the way they compete, the type of final products that they produce). On the other hand, innovation affects competition because firms use innovation as a strategic tool to gain and/or sustain a competitive advantage on the markets on which they operate.

One popular way to model the latter link in the economic literature is to assume that firms are engaged in a "patent race". That is, two (or more) firms pursue the same goal (i.e., come up with a new product or process); to this end, they choose how much R&D resources to invest in view of being the first to reach the objective and so, to file a patent so as to secure a dominant position in the market. Hence the idea of firms racing for a patent.

Starting with the seminal papers of [Loury \(1979\)](#) and [Lee and Wilde \(1980\)](#), a vast literature has studied this strategic interaction among firms vying for a patent. Among the issues that this literature addresses is one question that is of particular interest for public policy: how do patent races affect the firms' incentives to conduct R&D and to introduce new products or production processes on the market? In other words, compared to what society would find best, do firms engaged in a patent race conduct too much or too little R&D? The answer to this question is important to inform the optimal design of the patent system (should patents be made shorter or longer, narrower or broader?).



Assessing the effects of patent races on innovation is far from simple as two opposite forces are at work:

- Patent races have the potential *advantage* of spurring innovation: as [Scotchmer](#) (2005, p. 112) argues, "patent races can increase the probability of innovation when inventors have different ideas for how to solve a targeted problem"; patent races can also accelerate progress when it is "the case that with enough attempts, any approach can be made to succeed".
- However, because of their 'winner-takes-all' nature, patent races have the potential *disadvantage* of generating wasteful duplication of efforts: many contenders invest resources to reach the same target but eventually, only one of them will be rewarded, meaning that the others invested in vain.

The balance between these two forces crucially depends on the innovative environment in which the firms operate. Are ideas 'scarce' (in the sense that no substitute idea addresses the same economic need) or are they 'common knowledge' (in the sense that any good idea is likely to be had and implemented by someone else)? The distinction is of importance, as explained by [Nelson et al.](#) (2002, p. 16):

“ [When] firms are presumed to be focused on a single research alternative (...), the patent race models point to a number of reasons why the increase in total inventive effort induced by the lure of a patent is not necessarily an unambiguous plus. If inventors perceive that other inventors are in the game, the expected returns will depend not simply on whether they achieve an invention, but on whether they achieve it first. Thus, patent protection may result in an outcome where firms invest their resources at a faster rate than the social optimum, and too many firms will race towards the same inventive goal (or fish in a still limited "pool" of invention prospects).

Of course, this outcome will be less likely in industries where there is a wider menu of potential non-infringing ideas, such that different firms will pursue different approaches. For this reason, some have suggested that an optimal patent policy ought to be industry-specific, allowing, for example, broad patent protection for industries such as the computer industry or telecommunications with many fertile, non-competing ideas, but limiting patent breadth in certain other industry categories.

The literature on patent races is mainly theoretical and relies heavily on game theory. [Some scholars](#) have criticized it as being "highly stylized and counterfactual". It is hard to disagree with the first part of this claim: models in industrial organization are stylized by nature (and it is precisely what makes them useful!); it is even truer for patent race models as they have to incorporate strategic interaction, multiple stages of decisions and uncertainty.

Whether patent race models lead to counterfactual results is actually hard to establish, simply because of the scarcity of empirical work in this field. The lack of empirical analysis may be explained by the fact that identifying patent races in practice is far from easy as firms

may file patents for many other reasons than just trying to outperform their rivals.

It must, however, be possible to identify situations that resemble patent races, i.e., industries or technological fields where a number of firms are pursuing a similar goal and are filing patents in the hope of seizing a new market niche. This is what I ask you to do. As examples may not be so easy to find, you'd better race to be among the first commentators!



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58 Responses to *Patent races: pros and cons*



Daniel Scurtu 7 November 2013 at 00:26 #

For anyone fascinated with advanced science and technology, quantum computing and quantum teleportation are very exciting fields to follow progress in.

To the world of computers, quantum computing will be the next major step in computing power, energy efficiency and compactness since... ever!

Long story short, quantum processors use base-3 (as in, 0,1, and both values at once instead of either 0s and 1s; for more info, google the famous Schrodinger's cat) processing, and the value of a q-bit is ideally given by a single atom's electron's spin.

But the road to breakthrough is laden with uncertainty (pun intended, for physics fans out there:) and physics problems that will need to be fixed before an error-free quantum computer is made available for the public.

I think this field specifically will be interesting to follow in the next few years due to the fact that it is in its infant stages. To be exact, any breakthrough in the next decades will be subject to the question "is this even something we can patent?" and the question "is this worth investing in if we cannot" will be on firms' minds all the time. The answers to those questions might end up influencing the development of the technology.

There are few fields that are so unclear on the current boundaries between pure theoretical science and engineering, and what is and what isn't something you can patent.

From a scientific, innovative standpoint, this is something important. No one company or one lab has come up with all the progress so far, and solutions in this field require both a spark of genius and an insane amount of creativity, which clearly points to the fact that the technology is the result of an entire community of really bright people.

But as questions are answered and the field moves from theory into practice, answering new questions will become more and more costly, and the scientist starts to have to share decision-making with the business manager, who might have different motivations.

Since the process is so cooperative, patents at the infancy stage of the technology might actually have a devastating effect. More specifically,

if patents are granted for a particular process, it can lock all other firms out of an entire branch of research in the field.

For instance, I'm actually worried that Microsoft "joined" the quantum computing field recently... BY FILING A PATENT! Without having spent long sleepless nights researching, they immediately filed patents for future use. <http://www.tomshardware.com/news/msft-patent-quantum-computing-cryptography.13938.html>

If we compare with IBM or D-Wave, their physicists have been on these problems for years, and their scientific contribution-to-patents ratio is far better.

Even so, D-Wave, while recognized as one of the leaders (they have the highest number of patents in the field), seems to be trying to seize a lot of the field themselves.

<http://finance.yahoo.com/news/quantum-computing-firm-d-wave-090100667.html>

Since at this point the financial implications are completely unknown, and the market for quantum computing is pretty much like the work itself, theoretical... it is unclear how much patents actually help stimulate innovation, but it is very likely that too much exclusivity will hurt long-term progress simply if we take a look at the level of collective effort and brainpower required.

One thing is clear to me: in a few decades quantum computers will replace classical ones where money is available, but if we see an oligopoly of a few firms who were fast enough on the trigger to file for patents, the technology will be adopted slowly, and have stunted growth. A monopolist will capture surplus not only in terms of space, but also time. The period for monopoly is artificially extended by virtue of nobody else researching the field intensely enough.

Like:  0

REPLY



Shan Liu 6 November 2013 at 23:55 #

My example is about genetic test products industry. Companies are moving to the race of offering cheaper and broader genetic testing for breast cancer risk to a growing group of women, following a U.S. Supreme Court ruling that ended Myriad Genetics Inc's monopoly over DNA.

Ambry Genetics, a company in California, offered expanded testing that included the BRCA1 and BRCA2 genes, which Myriad has had under patent since the late 1990s. The test product offers a comprehensive scan for all cancer risks in a single test. The BRCA1 and BRCA2 genes had been the most common cause of hereditary breast and ovarian cancer.

The ruling of the court has led to several consequences: (1) By invalidating key parts of Myriad's patents, the court has removed a bar that prevented firms' R&D labs using new technology from developing and selling broader one-time tests that search for all known cancer risks, including the BRCA genes. Many firms are expected to enter this market. Ambry, which is offering a basic form of its BRCA test for \$2,200, posted a headline on its website soon after the decision saying, "Your Genes Have Been Freed." The company also will include the BRCA genes for no extra cost in several broader based cancer risk tests it already offers. Meanwhile, Gene By Gene Ltd., based in Houston, put out a statement saying it would offer BRCA testing for \$995 in the U.S. (2) Following that is a number of isolated patent application related to additional gene tests. However, the U.S. Patent and Trademark Office issued a memorandum following the ruling that ordered its examiners to reject patent claims on isolated DNA. A variety of genes linked to higher cancer risk, the screens couldn't include the BRCA genes because of Myriad's patents.

The decision of the Supreme Court opinion would unlikely to affect the vast majority of the Myriad Genetic's patent claims on the tests for the remaining cancer genes. As a consequence, the innovation opportunities for the new entrants would be much more about the platforms of using such test products, rather than developing test products for isolated genes, for example BRCA 3, BRCA4, etc. The entrants furthermore face a pressure to compete with Myriad Genetics to get a volume that is large enough to cover costs. Thus it would be unlikely that there will be fierce competition immediately.

This reminds me to innovation (disruptive innovation in chemical industry), the innovation challenge in the chemical industry is more assets based when it comes to disruptive technology. How disruptive would the technology need to be for that to be adopted as a standard? Will it be adopted across the whole market? Maybe. But if you get other players in that market who have adopted these assets producing something that is out there. The production assets or these products are depreciated, and then you might have a lower cost from those assets. Therefore when a disruptive technology comes in, that technology is being used for the production of new capacity. When the new capacity is being built in the market, you will be based around that new disruptive technology. It is less likely that the existing production capacity with all the existing products will all disappear.

Like:  0

REPLY



Hexin Shi 6 November 2013 at 23:18 #

The first example come into my mind is the lawsuit of Apple & Samsung. Patent races is very fierce in electronic market in recent years. And now we can easily to see that Apple & Samsung are occupying dominant position in mobile market in the world. Apple & Samsung's patent lawsuit is always continue, last property rights case is not over yet, and a new one about Apple's Siri technology is facing trial in March of 2014. Before this, Apple asked about Samsung's patent lawsuit many times.

Why Apple always conduct lawsuit with Samsung? Firstly, because of the market share. Based on the data of second quarter of 2012, the total number of global smart phone was sold is 1.54 million, Android phones occupied 68.1% of market share and 44% of Android phones

produced by Samsung. IOS just occupied 16.9%. Secondly, Apple clearly it can't compete with Samsung in terms of ecosystems and shipments, so Apple want to drag Samsung on patent & design lawsuit in order to gain enough time to invest R&D and develop a new technology.

In conclusion, patent races will bring some advantages, it can stimulate firms invest R&D to innovation and to produce progressive technology. And it also generate wasteful duplication of efforts, like Apple & Samsung, they all invest huge resources to reach same target(gain more profits, occupy big market share), but only one can gain reward, the resources of others will be wasted. It also let market more competition and will generate illegal competition.

Like:  0

REPLY



XIEWEN YU 6 November 2013 at 22:25 #

Patent race competition is a difficult development opportunity to seize for both economy market and individual business. It can save the wealth and resources of the whole society in terms of avoiding reduplicate investments by different companies. While patents are publicly published, it can be easier for others to develop the technology much further based on the intrinsic technology. It can also help the governments regulating the markets legally and effectively For individual company, it is more profitable by owning its own patents. By patents releasing publicly ,consumers can buy products by searching for certain patents. It is benefit for company to manage their reputation and monopolize specific markets. Patents is also a kind of invisible assets for the company. It can be sold while being considered useless by one company. It helps company to reduce the risk to some extent. however, it has some bad aspects naturally. While many competitors are investigating the similar products at the same time,it may cause a big amount of waste for the others after one apply the patent faster. It also has bad effects on maximizing the development of products and technology.

Not only accelerating the speed of innovation ,but also figuring out the timing to applying the patent correctly is important for the companies. Timing is one of the most important thing to decide whether the company will achieve success in the market. According to Russell (2004), if applying the patent too early, it is difficult to decide the professional range of certain products and competitors will detect and analyse corresponding solutions easily. However, companies will lose privileged time and opportunity if apply patent later than other competitors. I agreed the theory which refers to temporary patent (Grossman and Oliver 2000). The government should offer companies more time to investigate the market needs and value of their innovative products after applying temporary patent. Company can decide whether apply the final patent in terms of the market outlook and the real commercial value.

Like:  0

REPLY



Domien Frederix 6 November 2013 at 22:24 #

I would like to discuss something slightly different from the previous comments. Recently, Kenneth L.Judd et al. published a paper on optimal rules for patent races. They argue that analyses of patent policy focus on the optimal duration and breadth of patent protection but assume that a firm does not receive a patent until its R&D process is complete. By distinguishing between the stage of the innovation process where a patent is granted and the end of the innovation process, it becomes easier to evaluate the desirability of races and to analyze their effects on the pace and cost of innovations before and after the patent grant (i am partly quoting their article here). This provides for some interesting insights, they discuss for instance the fact that the first patents for xerography were granted many years before the first copy machine. Another example is the transistor : a lot more capital was invested in the development of the transistor after the patent was granted. Without going into too much technical detail (see the paper for more details), it can roughly be said that a patent authority weighs three main considerations : the time of product readiness (R&D is complete), the potential waste of a patent race and the welfare loss from temporary patent monopolies. If one would assume that patents are only granted after product readiness, there can be much overinvestment in the patent race but a short product introduction time (product is ready). This patent race waste can be eliminated by an early patent grant (or the authors argue a smaller reward). However, early grants can introduce more inefficiency because it is more difficult to filter out the less efficient firms. The authors also argue that races can motivate firms beyond the price of the patent and that they serve subsequently as a filtering device (most efficient innovator selection). Their results show that the choice between long and short races depend on the social returns to innovation, the planner's objective (social versus consumer surplus), and the inefficiency costs of compensating the patent winner. In an environment with reasonably inefficient transfer mechanisms, longer races are preferred when firms are homogenous and shorter races are chosen otherwise. This result overturns the conventional wisdom that when firms are likely to compete fiercely, i.e., when they possess identical technologies in a simultaneous-move race, short races are preferable because they avoid excessive investment (nly when there is very little constraint on the prizes a patent authority can give).

<http://repository.cmu.edu/cgi/viewcontent.cgi?article=1552&context=tepper>

Like:  0

REPLY



De Temmerman Yann 6 November 2013 at 21:28 #

For my review I have chosen one of the most famous patent race of the history. The patent race between Alexander Bell and Elisha Gray, the two inventors of the first phones. These inventors worked on the same project and had common goal : « The art of transmitting vocal sounds or conversations telegraphically through an electric circuit ». On February 14,1876, they filed both their patent application.

In the culture, everybody thinks that Bell was the man who has invented the phone but it isn't exactly true. That is Gray who has filed the first « caveat » (it's a document to introduce a patent application). Bell has completed his project with the phone's concept of Gray and they filed the same day an application for a patent. Gray's attorney filed a caveat for a phone just a few hours later entitled "Transmitting Vocal Sounds Telegraphically » So it is hugely Gray who should have received the patent because he's the main inventor but this is Bell who has been awarded for the first phone patent. This patent has caused much controversy thereafter.

But don't forgot that Gray and Bell were two brilliant minds working on one of the greatest invention of the 19th century. So their struggle to obtain a patent was fully justified. The patent allows to protect your invention and also be alone to improve your product in the future.

It's also interessant to think about the fact that 2 people has similar inventions the same year. The environment is really important in the process of innovation. They work on the the phone just after some innovations about the telegraph. So we could say that the previous inventions, knowleges influence the innovators. It's the same thing with others products like the computer (for instance, Apple and Microsoft create their computers at the same period). Thus inventors must pay attention at the news technologies around the world to optimilise the handle of the ressourcecs.

Sources :

http://inventors.about.com/od/gstartinventors/a/Elisha_Gray.htm

<http://www.telcomhistory.org/vm/sciencePatentFollies.shtml>

Like: 0

REPLY



Taelemans Charles-Edouard 6 November 2013 at 21:14 #

The examples I want to share here are the golf club technologies cases .

To give you the situation when you are young or middle-aged you can hit the ball strongly and you can hear it whistle to hundred meters away, you can do all the backspin you want on your ball ect...

But when you are a senior it becomes impossible to do those herculean hits and of course you begin to regret those years when everything was easy.

This is why all the companies that creates golf clubs , balls began 10 years ago a innovation race for pleasing those Americans seniors (and European some years after) which was a new market niche (because all of them were ready to change their all set of clubs , balls 3 times a year and since that more than 75 % of those companies were American it was easier for them to know what the average senior American wanted.

So they began what we can call the "how to please a maximum of seniors" races and the one of first developed product was the "sound club", a club that creates a great powerful sound when you hit the ball even if it was not a powerful shot, and even now the firm continue to make a lot of profit with the new versions of the products.

Since this innovation was discover the other firms tried to find a bunch of new innovative ideas and we can find in the market a lot of new products more innovative than each other like the "bumper club" which strongly compresses the golf ball and gives a lot of distance for the ball , the "stripes within the stripes club" which can easily give an effect to the ball and thanks to that you can easily spin your ball and give the effect you want.

Thanks to that kind of race now we have a lot of clubs for playing each golf styles we want and of course even if in the beginning it was an idea for pleasing the seniors, everybody buys those new clubs because it's now a part of the sport.

We read in the article that "patent races have the potential disadvantage of generating wasteful duplication of efforts: many contenders invest resources to reach the same target but eventually, only one of them will be rewarded, meaning that the others invested in vain."

But when you are in are in a market with a lot of possibilities you have clearly the incentive to continue your R&D until you'll find something.

Like: 0

REPLY



De Greef Thibaut 6 November 2013 at 20:42 #

If many cases of "patent races" lead to a situation with a winner and a loser, my example, which implies nothing more than the two biggest companies in the industry of display screens (the South Korean companies LG and Samsung) , ended with an cooperation agreement between the two firms.

The two companies were in a year-long conflict accusing each other of stealing liquid-crystal display (LCD) and organic light-emitting diode (OLED) technology. LG accused Samsung of violating its patents and required the end of the commercialisation of some product whose the Galaxy note 10.1 and the Galaxy S3 are part of. On the other hand, Samsung accused LG of violating patents on 18 of its products and of industrial espionage.

This legal case ended on 24 september 2013 by an agreement between the two firms which decided not to enter in a costly and longer conflict. "It was agreed that we two should focus more on cementing our leadership in the global market by cooperation, instead of engaging in all-consuming patent disputes," Samsung Display said in a statement.

"What's most important for both of us is upgrading our competitiveness globally," LG said.

What we can say about this case is that this agreement leads to a certain level of efficiency. The oled technology, wich has many advantages like an improved brightness, better power efficiency, wilder viewing angles etc, is seen as the future technology in the domain of displaying. The problem with this technology is that it is actually very costly and not enough competitive compared to other displaying technology that are actually used. Both firms understood that cooperation was the best way to improve this promising technology. In terms of R&D cooperation is, according to me, a good way to reach efficiency. By this way, LG and Samsung are reducing the generating of wasteful duplication of efforts.

Like:  0

REPLY



Benjamin Sommeville 6 November 2013 at 19:34 <#>

Unfortunately I arrive very late to post my comment on this article. I would like to illustrate a particular example of patent, "the videotape format war" between Betamax (Sony) and VHS (JVC). That was a period of intense competition of incompatible models of consumer-level analog video videocassette and video cassette recorders (VCR) in the late 1970s and the 1980s.

Sony was first to market, introducing Betamax in 1975 and continuing to press the Japanese government to adopt and enforce Betamax as a standard. JVC ignored this effort and busied itself licensing the VHS format to partners. The first VHS decks arrived in the United States in 1977, in spite of Sony's two-year head start, by 1980 VHS commanded 80% of the US market. There were many factors that contributed to the broad adoption of VHS in the US and in the world but I'm going to focus on two big ones.

The first was recording time. VHS could record four hours on a single cassette, while Betamax cassettes could only hold one hour. If you wanted to record a football game, Betamax was not going to be up to the task. Sony even eventually improved the capacity of their cassettes, but they were never able to equal VHS when it came to raw recording time.

The second was misjudging the frugality of the American consumer. Sony's marketing campaign focused on Betamax's technical superiority, and it was successful. It's true that Betamax was technically stronger, but the differences between Betamax and VHS were such that an average viewer with an average television set was unlikely to see much of a difference. In 1977, a deck of either format was retailing for around \$1,000, but manufacturing costs for VHS transports dropped quickly as more companies licensed the technology and economies of scale started to kick in. When given an opportunity to spend hundreds of dollars less on a VHS machine that was "good enough," the American public voted with its collective wallet. In 1988, Sony conceded defeat and started manufacturing VHS players under license from JVC, and in 1993 they stopped offering Betamax machines in the US market. VHS continued to reign supreme until it was inevitably supplanted by DVRs and DVD players.

What I want to demonstrate is that being first or stronger is not the ultimate guarantee to secure a dominant position in the market. Patent races have the potential disadvantage of generating wasteful duplication of efforts: many contenders invest resources to reach the same target but eventually, only one of them will be rewarded, meaning that the others invested in vain

Like:  0

REPLY



De Kock Boris 6 November 2013 at 19:31 <#>

This question of "patent race" goes, in my opinion, hand in hand with the issue of "patent troll". There are companies that hunt the patents, not for the purpose of innovation but in order to making lawsuits.

Indeed, the patent gives a huge right to his owner, this right forbids to the others to use the technology that is protected by the patent. If is right may be seen as a incitation to innovation, because he offers guarantees to the financier or to the author the monopoly on the technology, in a other side he's a part of his commodisation. The fact to invent becomes an intangible asset like a share in a stock exchange. We face to a situation where these patents aren't considered as a security for the authors, but as a part of stock portfolio.

A perverse effect is that "the patents troll" firms will enter into "patent race" with one only aim, to claim money to others firms who want to innovate. One very relevant example was the litigation between RIM (Research in motion, producer of the mail software exploited by blackberry) and NTP,Inc. who has the only aim to operate patents. This firm, after many years of lawsuits achieved to obtain a compensation of \$612 500 000. Even if RIM wouldn't have paid less after this lawsuit, in the American judicial system, the exploitation of the disputed technology might be suspended all long the trial. This possibility would have represented much higher loss than this compensation.

Like:  0

REPLY

Lefebvre Jean-Christophe 6 November 2013 at 18:22 <#>



When I read about races in technology, I often think about nuclear fusion. This is for me the biggest race ever. We almost never speak about it but this is a really important innovation for our future. Nowadays, there is an ecological crisis. We need a solution for energy. There are solutions but none of them resolved a serious part of the real problem. By example, if we would like to shut down all nuclear centrals in Belgium we would need 28 000 wind turbines to replace them.

In a classical nuclear central, we use the fission to produce energy. The actual problems for this are first, the nuclear waste and secondly, the danger of explosion. This is why people are afraid when they heard the word "nuclear". However, nuclear fusion is risk free and there is no waste. Furthermore, fusion produces five times more energy than fission. The only problem for fusion is the technology needed. To control the fusion, we need to create new central which is a giant puzzle of pieces that we have to invent. Therefore, there is race of patents here.

Indeed, each step or discovery is a reason for patent which would give advantage for the owners. In my point of view, this is a healthy race because of the potential results of the final objective. This technology is needed and the race accelerates the process of invention. Useless to say that the company or the country that find the technology will become immediately the leader on the market of energy. It's a little what occurred with nuclear fission, the countries that control this energy are among the most powerful in the world.

To conclude, the fusion appears like a solution for a lot of problems. First, there wouldn't be ecological crisis and spending time and money for this. Then, with this new source of energy, electric cars or planes could become a reality. It remains one question: When we will master the fusion, is it ethical to put patent on it and tell who can or can not use this energy?

Like: 0

REPLY



Henrotte Philippe 6 November 2013 at 18:22 <#>

I will speak about the evolution of display in general because it illustrate the text perfectly.

The technology in the display have evolved revolutionary several time with breakthrough innovations during the history. At the begening the image was projected then the cathodic tube was invented. Later, coulour apeared, then the flat screen with the lcd technology, led technology and oled technology. Compagnies also had struggle with the 3d technology for several year. Today compagnies are trying to improve the quality of the screen as much as possible with ultra HD screen and they are also working on a flexible screen.

All those beakthrough innovations where optain thanks to R&D expenditures and were patented when there were invented. But in this case, the competition wasn't destructive, indeed several brand are working with their own technology to optain the "same" result. The 3d with active or passive glasses, the UHD with led or oled are two examples. Eventuality 2 or 3 competing technology manage to survive.

In my opinion this kind of race might be profitable for competitors, indeed they can come up with different things that are relevent. They can sell their product, make a profit and have returns on their R&D expenditures (Of course their technology has to work).

Furthemore this race also help the technology, indeed if the compagnies had stoped loking after the lcd technology thyy wouldn't have foud the oled technology and the flexible screen would never have existed.

As a conclusion I would say that patent race is constructive in this industry because it allows them to meet clients need while having returns on their investment on R&D.

Like: 0

REPLY



Arnaud De Visscher 6 November 2013 at 16:54 <#>

The example that comes in mind is the war started in summer 2005 between **Toshiba** and **Sony** for the unified format disc succeeding to the DVD. It opposed the *HD DVD* (Toshiba) and the *Blu-Ray* Disc. Just as the latter one, the *HD DVD* was a discontinued high-density optical disc format for storing data and high-definition video. Both discs could handle a maximum resolution of 1080p and the compression forms were MPEG-2, AVC MPEG-4 or VC-1.

The main differences laid in the fact that the Blue Ray Disc could catch to 50 GB and its competitor only 30 GB. But the *HD DVD* Lectors had a retro-compatibility for *DVD*'s.

Even though there weren't any specific patent filed by the companies, they both spent a lot of money in R&D in order to be the winner of this 3 years long fight (editor's note: actually the retro compatibility of the HD DVD player was patented but it is irrelevant in a fight where the objective is to sell high resolution discs and not *DVD*'s). It ended with the loss of Toshiba.

This example shows us not only the waste of money in R&D for a company but also for the consumers. At some period, shops sold the two kinds of high definition discs (the last one ever produced in *HD DVD* format was *Into The Wild* in 2008) which confused people because they had to make a choice with a long term consequence. The one who bought a *HD DVD* player were the future losers. And who could blame them for backing the wrong horse?

Like: 0

REPLY

**Jori Sihvonen** 6 November 2013 at 16:25 #

There have been good examples of industries with patent races so far. The bio-engineering industry has been touched upon a few times, and the patenting of GM-crops was well explained by Marie Khanphanh, and I agree with her especially on the ethical sides of the issue. The issue of someone isolating a trait in an existing plant genome (which has been developed through evolution and plant breeding) and transferring it artificially to create a new plant variety and patenting this variety is highly controversial.

However my example is the advanced biofuel industry where various companies (Butamax, UPM, Neste oil...) are racing to create better biofuels and patenting to keep their ground. Some of the companies are oil companies broadening their product variety and possibly slowing development of biofuels by patenting just-in-case, some forestry and agricultural companies aiming at using their raw materials more efficiently (i.e. UPM) and biotech companies who concentrate on biofuels. Also universities and research organizations are competing in the field. The common denominator is the end product, but various companies have different raw materials and thus slightly different processes. However they still have patent arguments as the general idea is similar, modifying plant hydrocarbons to more complex ones which are suitable in existing combustion engines. How many ways can there be? Some companies are also researching on algae and bacteria to create biofuels, this area is however not still at industrial ready technology.

An example of a specific patent (and research) race is the development of a cheap way to crack plant cell walls which has been "always 5 years away in the last 30 years" (NYTimes 2007). This goal has been reached to various extent by various players as there are now commercially operating biofuel plants, but they use various feedstocks and processes. Still patent infringement cases have occurred. For instance in Finland Neste Oil is trying to shut down a UPM biodiesel plant (not yet in production) as it infringes two of their patents, but UPM denies this saying that their process is different. Another case has been between Butamax (BP and DuPont joint venture) and Gevo. The race for better biofuels is an important one as crude oil reserves are depleting and first generation food plant based biofuels are considered unethical. Hence the development will continue and patents for very similar processes will be filed, and these two examples are probably just a start in the following patent wars.

Sources:

(in Finnish) Neste oil sues UPM for violating patents, as end products are competitors.

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Like: 0

REPLY

**De Bont Eloïse** 6 November 2013 at 16:22 #

After some researches on Internet, I found an interesting example of patent race about graphene. Graphene is a chemist material which has been isolated for the first time in 2004. Graphene is a such wonderful material because it has many chemical properties that have never been all together within a single material. Graphene is a transparent, extremely fine (the finest possible), waterproof, elastic, flexible and in the same time tough material. Moreover, graphene is the best electrically conductive material known today. This amazing molecule is worth gold because it contains thousands of future promises and because it could revolutionize fields as diverse as electronics, energy, healthcare and construction. As it can be expected, companies are willing to invest a lot of money in it and are willing to tear his patent. So, since 2004, the race has been launched.

More than 7000 patents has already been posted about the graphene, about its extraction, exploitation, production, utilisation and so on. For exemple, the IMPMC (institut de minéralogie et de physique des milieux condensés) has developed a new technique for making graphene which is patented (BREVET WO 2009/074755). Of course, a lot of big companies have understood the stake of graphene and invest therefore money in this material. In Europ, the UK with Applied Graphene Material and Spain with Avanzare or Graphenea are to the forefront of the technology. IBM has also made different prototypes of electronics components and Samsung has presented a new flat panel display with graphene. Head, the manufacturer of racket tennis, has proposed a graphene racket whose the promotion has been ensured by Novak Djokovic and Maria Sharapova. Currently, BASF is imagining a car, Forvision, which will be construct with materials based on graphene. In 2012, in a report about the future of the graphene, the companie envisages a market of \$1,5 billion in 2015 and \$7,5 billions in 2025.

As expected, China is also in the race, with almost as many published articles as Europe, more than 2600. But what is very important is that with more than 2600 patents, China exceeds Europ and USA.

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Like: 0

REPLY

Depreter 6 November 2013 at 15:35 #



An obvious example of patent race is the race to find out a vaccine for the AIDS problem. If investors aim to get a high return on investment, it would be worthwhile to invest in researches about the AIDS. Because this vaccine should be seen as the "miracle-solution" to one of the first cause of death in the world and could save billions of life in the future. So the demand for this product would be very high. And the revenues too!

Because of the nature of the AIDS virus (he has the particularity of having an anti-genic RNA, which means that it is very difficult for antibodies to identify them) it is very costly to make researches on it. That requires great expenditures in R&D, in knowledge etc. And if technically it is very difficult to get on to a vaccine, it is also unlikely because of the anti-genic RNA too.

But subject is not closed. There is not only one firm which is undertaking researches on the AIDS. Indeed, there are plenty of scientists, universities, pharmaceutical firms, states (which sometimes collaborate between them) which have worked and still are working on this miracle solution. That patent race could be seen as very great for the population's welfare because it increases the probability of finding out a vaccine. But this competition among the firms decrease the probability for each one of them to find out this invaluable source of revenue, and it could discourage some actors that could stop the investments and so decrease the total probability to find the solution.

This patent race can be more complicated if we think that it may also be profitable for firms to find out a "simple" drug that can cure but not immunize. In this case, there will be less firms looking for vaccine which increase their probability to discover. But we can rationally assume that it is more likely to find a drug than a vaccine, and we can think about the following suggestion: is it still profitable and efficiency to invest in order to find out a vaccine? Because these two products can be seen as substitutes because if scientists discover a drug, all expenditure allocated to the researches in vaccine would be useless and wasteful, and vice-versa! Moreover if one firm can patent a drug, this firm is probably the first which will find a vaccine. This means huge losses for all the others firms of the industry!

Like: 0

REPLY



Aneta Spychalska 6 November 2013 at 15:10 #

I don't know if I arrive too late with my example but given the mass of comments someone maybe has already talked about the same thing as me.

To give an example of patent races I decide to speak about the fact when some companies make patent war between them in order to buy a company patents.

To illustrate this, I will speak about Nortel's patents. This business began two years ago when Nortel was in bad financial health and decides to sell 6000 of his patents for an amount of \$ 900 million. Two groups was competing to buy the Nortel patents, on the one side the Rockstar Bidco consortium compose of (Apple, Microsoft, Ericsson, Sony, EMC, RIM- manufacturer of BlackBerry), (not confused with Rockstar "Games"- video game developer) and on the other side Google, Samsung, Huawei and HTC.

At the begin, Google was the favorite because his proposition has been approved by regulatory authorities. Rockstar eventually won in 2011 by putting \$ 4.4 billion on the table when Nortel claimed that \$ 900 million. Certain patents cover key technologies (4G, LTE ...).

Since that time Google has paid no license to holders of patents (Rockstar). They ask Google and its partners a fee on Android.

The Rockstar consortium attack Google and Android handset manufacturers including Samsung for patent infringement. The proceedings were instituted before a court of the State of Texas (USA).

Seven patents are particularly concerned with one that allows the targeting of advertisements based on research conducted by users directly affects the Google ecosystem.

It accuses Google and Samsung of violating patents related to operating the combination of Internet research and the relevance of advertising. The complaint could have an impact on Android products when you know that nearly 80% of smartphones sold worldwide run on Android. In addition, the web giant Google dominates the market in part through mobile advertising.

Following this, Google had to buy Motorola for \$ 12 billion to gain a portfolio of patents result (considered at a bad deal).

Eric Schmidt, chairman of Google, claims to stop this war of patents it deems detrimental to innovation. Indeed, given the number of Android devices that run on the planet, the addition could be costly for Google and its partners.

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Like: 0

REPLY



Jean-Benoit Valschaerts 6 November 2013 at 13:23 #

A striking example of an ongoing patent race is the race to dominate the booming green car market. In the last few years, with stronger CO2-emissions regulations and with an ever high oil price, we've seen a lot of carmakers launching electric vehicles on the market. And in the meantime, the number of patents that were filed in has also reached a record high. In 2008, only 20 patents for green car technology were filed per quarter in the US, now that amount has reached 90.

The car market is on a change. The economic environment has gathered all factors to create a need for the carmakers to innovate and to commercialise greener cars. Regulations are getting tougher, public awareness about climate change is higher than ever and the prospective energetic challenges made that there's a growing demand from the customers.

Since green cars are technology-intensive, it is crucial for everyone on the market to have as many patents as possible and to defend them. On top of that, the market is now broader than it used to be, newcomers as Tesla, battery companies like Panasonic and LG also enter the race for patents, leaving traditional carmakers in a highly competitive environment.

There are concerns that the automobile industry will bear some resemblance to the smartphone market, where court decisions make the headlines on a regular basis. With all the new patents being filed, it is utterly probable that the motor industry will become more litigious in a near future.

One of the solution adopted by carmakers to stay in the competition is to develop joint ventures with each other. A recent example of this is the alliance between Mitsubishi and Renault-Nissan to develop jointly an electric car. Further than Mitsubishi, Renault also partnered with Avtovaz in Russia, Dongfeng in China and with Daimler in Germany to develop joint projects. By doing this it hopes to develop and to sustain a strong position on the market.

Sources: <http://www.ft.com/intl/cms/s/0/f3875250-40a3-11e3-ae19-00144feabdc0.html#axzz2jrglmb1>
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Like:  0

REPLY



Senterre Quentin 6 November 2013 at 12:54 #

As far as I am concerned, when I think of patent races I immediately think about 3D holographic display. Nowadays you can see 3D films at the cinema but it seems that this technology is already outdated. A lot of companies are in a patent race to make this technology available for the public.

The 3D holographic display technology first appeared in the film "Star Wars" and it was just another dream of Steven Spielberg's at that time. However, in 2005 researchers from the University of Texas claimed that they had created the first true holographic display. In 2010, Apple patented 3D holographic displays without any eyeglasses.

There are different types of holographic display, which still evolve every year. According to the definition: "Electro-holographic display is a type of holographic display that uses electro-holography for recording and reconstructing 3D objects". Compared to other 3D displays, this one presents more advantages: for example, it can reconstruct 3D images with full parallax. » I will not discuss here all the possibilities and the different types of use of this technology but simply explain the different patent races and the companies involved in it.

Apple has a patent on 3D holographic display using a 2D screen but this technology only fools our brain so that we have the "impression" that there is a 3D image in the air (which is not true). The system presents images taken from different angles of view for the right and left eye, which create a 3D image that our brain interprets as in 3D dimension.

Source: <http://iphoneaddict.fr/post/news-11801-apple-brevette-la-3d-holographique-sans-lunettes>

Serious Factory is a company which offers to transform your simple 2D presentations in 3D (using a 2D invisible screen) within thirty minutes.

Source: <http://www.seriousfactory.com/hologramme-projetez-de-la-3d-sur-un-ecran-invisible-cest-possible/>

On the other hand, researchers from Burton Inc. in Japan developed a new 3D display system without any screen. This system projects images in 3D dimension in the air using a laser light system. This Aerial 3D technology is also called "True 3D". The researchers even combined different lasers colors to generate 3D color images!

Source: <http://www.actinnovation.com/innovation-technologie/hologramme-nouvelle-technologie-permet-de-projeter-de-la-vraie-3d-dans-les-airs-3747.html>

As we can see in those different articles, the patent race for 3D holographic display is real and many companies are trying to develop what should be the future of screen display. The only questions which still remain uncertain are: "When will it be available for the public?" and "Who will be this patent race winner?" To be continued...

Like:  0

REPLY



Sailesh 6 November 2013 at 11:27 #

One example of patent races is from India. Some commentators have already discussed the pharmaceutical industry, but this example is specific to the generic drugs market in India.

To develop its pharmaceutical industry, India had abolished product patents in the 1970s, but it allowed patents to be filed for specific processes to develop products, regardless of whether that product has been patented elsewhere in the world.

The consequence of this was that while this change made the Indian market undesirable for multinational firms, Indian pharma companies became increasingly adept that reverse-engineering the process for manufacturing drugs already developed elsewhere in the world. As a result, India became one of the fastest growing generic drugs market.

The big Indian pharma companies – Ranbaxy, Cipla, Dr. Reddy's Laboratory – are in a continuous race to file patents ahead of each other.

While this was definitely the case in the 1990s and early 2000s, the race has continued even after product patents were introduced in 2005 (based on a deadline set by the WTO's TRIPS agreement). Today, the action has shifted to USA, where the target is to develop new formulations for drugs whose patents are nearing expiry, and filing either process patents, or ANDAs under Paragraph II or III. Both of these actions will provide exclusivity for some period of time.

Like:  0

REPLY



Guillaume d'Oreye 5 November 2013 at 23:59 #

I don't know if i should be relieved or not as i don't see the famous competition between Pepsi and Coca-Cola! In this case it's not really a patent race, even if there could be a race for the shape of cans and other stuffs, but a good example of positive competition.

What would be more annoying than to see one of those firms disappear? It's now about a century that the war between them started, a good war. Who never saw their advertising battle to show they are the best? These ads are amazing because they are often funny and show respect for the other brand. That leads to the fact that people like these brands even if they don't consume it. Of course there are addicts that shout that one is better than the other but they are few and they add fun to the rivalry. If you google "coca pepsi" and then look at the pictures most are (funny) ads and there are continually new "ad-battle", even realised by fans. Either Pepsi and Coca have no interest in seeing the other one disappear. I don't think that an addict would ever dare to taste the other one. Together they build a good reputation and have a worldwide know brand. I think it's better for them to occupy the market together and avoid new entrant than to fight in order to have a monopoly as their products are quite different in term of taste. The Cola Contest showed that 58.8% of people prefer the taste of Pepsi compared to Coca. Meanwhile most of colas sold in the world are produced by Coca-cola...Does it mean that people prefer drinking something less good to be "like the others"? I don't know. But the strenght of Coca-cola is not its product itself but the fact that their coke is massively present in most of countries and people get used to it so when Pepsi arrive, with a better product, people don't want to change because they are already used to the taste. Now i think this market has reached is equilibrium and so it would no be good to break it by taking one of the 2 producer away.

<http://www.lalibre.be/economie/actualite/pepsi-vs-coca-une-agence-belge-cachee-derriere-le-buzz-527902d93570238618e226cb>

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Like:  0

REPLY



Francesco Battino 5 November 2013 at 21:25 #

Motion capture and motion sensing technology are primary technological research fields, for their military, medical and entertainment functions. This complex field count a great number of applications: from rehabilitation to defusing a bomb with a remoted controlled robot , from graphic effects and movies animation to gaming. I'm going to examine the gaming field, but I will also briefly discuss about the medical and the military field.

The gaming world is an industry which added \$4.95 billion to the U.S. Gross Domestic Product in 2009 and which have since grown stronger in the following years. So, to firms, is alluring to assure the leadership position in the newest technology, giving birth to one of the most bloodthirsty legal competition on patents. The patent competition is not only based on software, but is even more rough on the hardware technology. In this one, which is the stronger, patent races are mostly related to both the motion technology and the augmented reality fields.

The motion-sensing game are now considered, with augmented reality, the new frontier of family home entertainment. This technology entered the gaming world early, but became worldwide in 2006, with the launch of the seventh generation console "Wii". Between the three seventh generation home consoles (Wii, PS3 and X-box 360) only the Nintendo entered the market with this new revolutionary technology, having as target families and groups of young friends. Since 2006 till 2013 Wii gained a good share of the gaming market. In 2007 Sony tried an experiment with the PS Eye, but only in 2010 the real response began. Microsoft responded with the Kinect technology and Sony with the PS Move, which evolved the caption and the sensibility of those type of controllers.

An exemplification of how strong the patent race in the gaming motion capture and motion sensing technology can be, is testified by the overwhelming number of legal issues. I will enumerate just some as an example:

Creative Kingdoms versus Nintendo (Wand Technology versus Wii U remote control).

Triton versus Nintendo (Wii motion plus vs US patent No. 5181181)

Impulse Technology versus various firm (use of interactive sports simulator based on TRAQ technology)

Nintendo "Wii Balance Board", "Wii Remote".

Ubisoft, THQ, Majesco Entertainment Company, Namco Bandai Games America, Konami Digital Entertainment and Electronic Arts which developed games which use the Wii Balance Board and the Wii Remote controller.

Impulse Technology versus various firm (use of kinect motion-sensing video game controller based on TRAQ technology)

Microsoft "Kinect controller"

THQ, Harmonix Music Systems, Ubisoft Holdings, Konami Digital Entertainment, Sega of America, Majesco Entertainment, Namco Bandai Games America and Electronic Arts, which developed games which use the Kinect technology.

In the medical field the patent race is in it's first stage, but a lot of application for patent have been filled in the last few years.

For example Aurelie Boudier in 2012 proposed a medical device with motion sensing which can be used to manipulate on remote different medical devices, like ultrasound and x-ray procedure, allowing to use from the hospital medical devices in the patient house.

The equip formed by Andrea Yuen, Amy Droitcour, Anders Host Madsen, Byung Kwon Park, Charles El Hourani and Tommy Shing patented in 2013 a radar based physiological motion sensor which consent to digitalize and extract information on the cardiopulmonary motion in different subject, allowing to monitor the status of a patient directly from the hospital.

In 2012 Craing Smith and John Varaklis have patented a motion sensing and capture sistem which can be used in diagnostic, predictive and therapeutic tool.

In the military field great effort is centered into remote controlling, robotics and data collections. Some examples of the military patent race in motion sensing and motion capture could be the "ergonomic control remote glove" patented by Vadim Plotsker in 2013, which can be used to manipulate robot from afar. On the intelligence side, we can find the "intelligent data collection and transmission based on remote motion sensing" patented by Hui Siew Kok and Chu Guangzhi in 2013, which control an area using remote sensing, a motion sensor. In conclusion, an "old" invention in this field is the "motion-coupled for environment for preventing motion sickness" patented in 2004 by Keith W. Brendley and Jed B. Marti, which, using a series of inertial sensor, gyroscopes a different sensor types, allow to reduce motion sickness on military and civilian vehicles.

In conclusion, I think that motion sensing and motion is a very important field of innovation, where the patent race is the leading strategy.

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Like:  0

REPLY



Ricardo Pereira Gomes 5 November 2013 at 18:00 #

The example that I want to talk about is the 4G with the conflict between Samsung and Apple. Few months ago, we have seen the trial between Samsung and Apple which is still in progress. Indeed, few years ago when we began the researches for the 4G, The two start to invest a lot to perform with this new technology and make the more patent as possible. Indeed, they don't have patent for the 4G but derivatives of this one and these two big firms try to have a lot of patent to restraint the other and to be the first to be able to take the best of the 4G and restrict the other.

At the beginning, we observe that Samsung have a really advantage, they invest a lot and make really good innovations but Apple has caught up it's delay. With the trial between Samsung and Apple, We can observe the "winner-takes-all" nature. Indeed, with the trial Samsung must pay a compensation to Apple because they had violated 6 patent of Apple. In this case, we can suppose that Apple was the first in the patent race but not with big advance and thus the innovations of both firms are still equivalent and Apple gain all the benefits and Samsung loss the race and must pay Apple.

With this example, we observe that patent race could be good for innovation, because the two want to be the first and by this way invest a lot in R&D, but the negative effect is that the loss for the looser could be hard to bear and in some case, firms go bankrupts. This is not the case here, because Samsung are in diverse market and the fees are bearing for this big firm

Like:  0

REPLY



Biglia Alexia 5 November 2013 at 18:00 #

Unfortunately I arrive very late to post my comment on this article. There are already a lot of example of "patent race" like publishing, pharmaceutical industry, mobil phone...

Therefore I decided to post a comment over a different subject but which we can link to "patent race". My topic is over movie producer who want to buy the property rights of a book to make a movie with it, to adapt it on the big screen.

When a book become a best seller, have a huge success there is many chances the it become a success in the form of a movie. But in order to adapt the book in a movie you have to buy the property rights. If one producer is interested into the property right of one book it's possible than another one also want it. So they both engage their self into a "property rights race". They have to be the first one demanding

or to be the most attractive to the author.

Like:  0

REPLY



Antonio Ouwerx Jose de Mello 5 November 2013 at 17:48 #

An interesting situation that could be also associated to a patent race is the competition between patent trolls and companies. A patent "troll", also known as PAE (patent assertion entity), is an expression that originated in the early 90's. This expression describes an entity that defends patents as their primary business model. This kind of entity is also commonly known as NPE (non-practicing entity), meaning they do not sell products or services other than the licensing of their patents. Thus, NPEs typically do not infringe on the patent rights from other companies. As a result, they are essentially invulnerable to cross-litigation, which is otherwise one of the most important defensive measures in patent disputes. NPEs are usually focused on industry's software and business-process patents because there are easier to exploit. Partly because the language in software patents, as opposed to that of drug or chemical patents, can be abstract, and partly because software is patented as opposed to copyrighted.

Unlike a typical patent race where companies are looking to obtain larger market shares or to create new niche markets by R&D and the introduction of new patents, this fight between patent troll and companies is purely motivated by money. This is a race where the NPE extend their patent portfolio by buying existing patents. These patents are seen as investments that one day will be profitable through law suits. A study made by J.Bessen, M.Meurer and J.Ford shows that fighting these NPEs cost companies an estimated \$500 billion from 1990 to 2010.

For companies, NPE litigation is therefore particularly challenging. It can be highly distracting to management, which must pay money to outside counsel to defend itself, or to the "other side" in order to secure a license and in some situation both. One of the more effective way to protect themselves from NPEs is simply through the same strategy, in other words by buying up patent stockpiles. For instance in August, Google paid \$12.5 billion (63 percent above the share price) for Motorola Mobility to get its 17,000 patents.

To put in a nutshell, even if this kind of patent race does not promote directly new innovation, it stays a contest where companies focus their efforts on defending their existing patent property, than looking for new one and where their prize is money (for NPEs) or the assurance of their market position (for the companies). Moreover, companies with financial means are more and more willing to buy patents as a protection strategy or investment, and this indirectly motivates other companies or researchers to bring up new patents in the purposes of selling it. But in the end, there are also drawbacks linked to this logic such as the fact that this patent race is a consequence of law suits, which drag a lots costs and cause lost money.

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Like:  0

REPLY



Rachit Khare 5 November 2013 at 09:37 #

It is a well know fact that "Necessity is the mother of all inventions". This has actually been the history of human race. Today's modern society is a result of thousand years of innovations. However, post industrial revolution there has been significant increase in the number of inventions. This has led to the race of being the first one to come up with a new product or technology, popularly known as 'Patent Race'. I can find several cases from 19th and 20th century where this patent race was clearly evident. Following are couple of such cases -

1. Telephone: In 1876, Alexander Graham Bell applied for the patent for a apparatus that could electrically transmit the voice. He edged out Elisha Gray by just two hours. Gray later filed a law suit but the court granted the patent to Graham Bell.
2. Jeans: Jacob Davis, a Nevada tailor was the first one to come up with the popular blue jeans design. His idea was to fit metallic rivets in the jeans which will make the jeans more durable. However, he did not have enough money to apply for the patent. He approached Levis Strauss for the patent. In 1873, the patent was granted to Levis Strauss and rest is history.

I would also like to mention the consequence of patent race in the field of Nano technology. It seems that there is a serious race going on for publishing patents in this field. In 2012, US patent office published over 4000 patents in the field of Nano technology. Unfortunately, as of now these technological inventions are not resulting into something which can be beneficial for the society. There are mainly two reasons for this - First, there is big web of broad and overlapping patents that have been filed by commercial and academic researchers. So, if someone wishes to develop a new product, there is a dense network of patents to be negotiated. Second, the downstream inventions almost always infringes the early broad and overlapping patents thus, stifling the invention at the birth. This scenario clearly shows one of the cons of patent race.

I hope the patent laws evolve in such a way that society can actually benefit from the race of patents.

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Like:  0

REPLY



Eva Leclercq 4 November 2013 at 23:05 #

I think that the air plane patent war that impacted America between 1908 and 1917 is an interesting example of patent race. The story started at the beginning of the 20th century when the first airplane was about to fly. At that time, lots of competitors were trying their luck in the field of aviation. Among them we noticed Samuel Langley who was highly regarded, well equipped and who was given a \$50,000 grant or the Wright brothers who did not have any funding for their venture and worked on their project in a humble bicycle shop. But in 1903, contrary to all expectations, Orville and Wilbur Wright succeeded and they were the first to produce a controlled, heavier-than-air craft. Soon after, they applied for a patent and in 1906 they were granted a patent for a flying machine. This included several specific things among which "lateral control", a very basic concept to flight. This patent will ensure them a broad protection and will preserve them from many competitors. This event marked the beginning of a patent war that will largely influence the American aviation. Afterwards, other aviation enthusiasts develop similar designs and had airplanes flying. The Wright brothers, so obsessed with protecting their invention, warn them not to make or sell airplanes that relied on the technologies they patented (which was quite impossible). But some flyers were stubborn, did not listen to their warnings and that resulted in a long and complicated series of lawsuits. However these patent wars abruptly ended when the World War One started. The real loser of this patent war was American aviation. In fact, for years, these legal issues hindered the development of new airplanes and so there were no acceptable American designed aircraft with the US forces. Americans had thus to use French machines during the war.

Like:  0

REPLY



Clarisse Werbrouck 4 November 2013 at 21:27 #

At first, when I was asked to find examples of industries where patent races are found, my first instinct was to go look at the pharmaceutical sector. Indeed, many companies are trying to develop cures or treatments for diseases such as cancer, Parkinson's disease... Why you ask? Simply because these diseases touch so many people that having a patent for curing such diseases would give an enormous advantage to the pharmaceutical firm. A lot is at stake for both the society and the competing companies.

I have found an example where Eli Lilly is trying to revoke a patent being held by Johnson&Johnson. Indeed, Eli Lilly has developed a treatment that uses the same antibodies than the ones described in a patent held by J&J in order to cure Alzheimer's disease. Eli Lilly argues that its treatment (called "solanezumab") uses these antibodies with a different mechanism compared to the one described in the patent. The treatment of J&J (called "bapineuzumab") has cost more than \$500 million in R&D and has been another failure concerning its clinical trial results. Eli Lilly argues that since they use a different mechanism, they can use the same antibodies protected in the patent. Another argument raised by Eli Lilly is that letting J&J keep their patent would deprive a lot sick people of an earlier treatment for their disease.

Let's talk now about what is at stake for the companies that try to find a cure to this disease: it was estimated that the first treatment to be successful would lead to a market of around \$20 billion. Competing companies in the pharmaceutical industry are thus highly encouraged to do research on treatments for Alzheimer's disease. From 1998 until now, more than one hundred clinical trials have been held and have all resulted in failures. Of course, a lot of money has been spent in R&D to develop and do these clinical trials. This shows that the pharmaceutical companies work at the same time in order to patent Alzheimer's cures and acquire this huge potential market. The winner of this race will definitely gain a considerable competitive advantage on its competitors.

Source: <http://www.businessweek.com/news/2013-04-25/eli-lilly-sues-j-and-j-for-patents-rights-in-alzheimer-drug-race>

Like:  0

REPLY



Edward Still 4 November 2013 at 15:23 #

There are many cases of patent races, from Bell and Gray's race to patent what would become the telephone back in the nineteenth century to today's race to develop a viable flexible phone.

One case that stands out in my eyes and which I find quite amusing is one that dates back to 2008 and was basically a race within another the race. The first race was won by Speedo who filed a patent for a brand new type of swimsuit in August of 2007: the LZR Racer®. The second race was won by athletes wearing this swimsuit at the 2008 Beijing Olympic games. The numbers back this up as 94% of all races and 98% of all medals were won by swimmers wearing the suit. And just as impressive is the fact that during these games, 23 out of 25 world records were broken in the suit.

Speedo launched a huge marketing campaign headed by Michael Phelps in February 2008, just months before the Olympics in Beijing. Speedo claimed that it was "the world's fastest swimsuit", and results in Beijing that summer certainly proved them right. The suite was the culmination of nearly four years of huge R&D work, and not any old R&D. Speedo worked with NASA experts and exploited the knowledge of

there Aeronautics Mission Directorate that had improved flight efficiency with its research in fluid dynamics .

What made the LZR Racer unique was the fact that it was the first fully bonded, full-body swimsuit with “ultrasonically welded seams”. These seams reduced drag by an extra 6% compared to classic overlapping or stitched seams. It was also the first suit to use a zip that was ultrasonically bonded into the fabric and hidden inside the swimsuit, which reduced drag again by 8% compared to normal zippers. These details show that it was every aspect of the suit that was innovative; not just the general design of the suit but every tiny detail.

The panels that made up the suit were designed to compress the swimmer’s body into more of a streamlined shape. This thereby created a reduced level of drag and enabled the swimmer to travel faster through the water. So fast in fact that in March of 2009 the governing bodies decided to ban the LZR Racer as it gave too much of an advantage to those wearing it. By doing so, those in power were basically telling speedo that they had done too good a job of creating this swimsuit and should come up with something less efficient for their athletes. This advantage was in fact acknowledged before the 2008 Olympics by those who weren’t using the “magic suit” as many claimed that they could not be competitive unless they wore the LZR Racer, and this despite the fact that they were sponsored by other brands.

Despite the ban of the LZR Racer, the competitive advantage it created not only for its athletes but also for its own brand is in many way unquantifiable. Even today in public opinion Speedo is by far the best and most well known swimming brand and its competitors are still very much playing catch up and trying to keep their heads above water. It also shows how heavy and pertinent R&D investment can reap huge rewards. One of the keys here was how Speedo worked with NASA to come up with the very best product it could for its athlete, it opened up in such a way to different fields and new ideas and managed to push the boundaries of what had been done before.

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Like:  0

REPLY



Marina Dinkova 3 November 2013 at 22:57 #

I found an example of patent race in Leuven. When you arrive at the station, the first thing you see is a huge bicycle parking, if I can say so. Although that at first glance we think that bicycles are the same, the R&D plays major role in the industry. In the last 20 years the bicycle industry has changed dramatically. These changes were induced by a complete turnover in customer preferences.

On the one hand was the introduction high performance bikes capable of rolling down mountains. This revolution led to a change in the bicycle supply chain: the vertically integrated manufacturers lost their dominance due to a slow adoption rate of the new trends and the lack of the technology required to manufacture components for these high performance bicycles. The parts manufacturers showed intense R&D capabilities and a superior adaptability to the new trends. Example of a companies that are competing in filling patents are Shimano and SRAM, which even bring to the German court patent case with cassettes.

On the other hand is the growing trend bicycles to replace cars as a main way of transportation. Demand for bicycles is growing. Customers need more convenient, light and easy to transport bikes. This demand made bikes high differentiated consumer products. An example could be Brompton Bicycle is a British company that specialises in folding bicycles and Dahon- US based company. The Brompton design has remained fundamentally unchanged over three decades, although it has been steadily refined. The first patent was filled back in 1971. The Brompton increases people’s independence and freedom so people can use this cycle wherever they can use. However the Brompton patent for folding bikes has expired and both companies are offering similar folding bicycles. Brompton and Dahon are trying to develop new and unique features of the well know folding bicycles, so they can file a new patent. Electric folding bikes are increasing in popularity and both companies are putting their efforts in this new market niche. Only the time will show who will win the race.

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Like:  0

REPLY



Rubens Moura 3 November 2013 at 20:42 #

A real world example of patent race can be observed in the therapeutic cloning industry. Companies running business in this market perform scientific research through cloning techniques with the purpose of medical treatment such as the replacement of organs or the generation of skin for a burn victim (Wise Geek). Presumably the potential future profitability of this market was in the past (and still is) highly significant, which justifies the considerable amount of firms trying to explore knowledge creation in this field.

In 2001, an evident event of patent race became a public. At that time, the biotechnology company Advanced Cell Technology (ACT) announced its successful attempt in cloning a human embryo, fact that has represented an important accomplishment for the development of further research about human stem cells. Besides the public announcement, in the same day, the novelty was published in a North

American scientific magazine (Journal of Regenerative Medicine) and two others of a more popular coverage (“Scientific American” and “U.S. News & World Report”). ACT’s measure was interpreted as strategy to ensure future priority from patent offices in acquiring exclusivity in the right of exploration of the discovery, in other words, to set a leading position in a patent race.

In practice, however, claiming a patent segment involving a cloning of human embryo may not be seen as a straightforward process. Besides the ethical debate involving the cloning issues, there are significant controversies among physicians about the possible long term consequences involving the health of the cloned human being (Isis News). An example of plurality of views about the topic is the fact that by 2001, the United Kingdom was the only country within the European Union which tolerated the development of human cloning experiments (Isis News).

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Like:  0

REPLY



Jérémy Delinte 3 November 2013 at 20:42 #

I would like to explain the blue laser technology as an example of a patent race. This technology was invented in 1990's by Shuji Nakamura, a researcher for Nichia Chemical Industries, a little-known Japanese company.

The blue laser technology was a new generation of short-wavelength lasers which allowed the creation of a range of products such as very high capacity disk (like blu-ray), high resolution printers, projectors or LED.

This technology had been pursued by several companies like Hewlett-Packard, Sony or Toshiba due to its competitive advantage.

Nichia and more particularly Shuji Nakamura used different materials than others that had been trying to develop this technology and Nichia won an access to a market with a high level of profit. Indeed, this technology could be used in several areas: IT, medical diagnostic, high definition storage, electronic equipment and so on.

After the announcement of this breakthrough, competitors began to invest heavily in research and development to acquire this technology and to compete with Nichia.

In this example, the discovering of the blue laser technology and the patent race related to this technology spurred innovation. Indeed, this was the “Holy Grail” that several companies were looking for. The commercial impact and the range of new products linked to this innovation forced competitors to find manners to compete with Nichia.

In addition to this, we see in this example that a patent race could lead to a heavy investment in R&D by companies who want to compete in a fertile market in order to seizing this.

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Like:  0

REPLY



Willems Margaux 3 November 2013 at 15:55 #

I want to explain a belgian case: the Leffe glass. Leffe is one of the most famous Belgian beer. At the begining, Leffe was a beer from Mont-St-Guibert brewery. The brand manager wanted the higher glass on a table in comparison with other beer glass. The model was created by durobor in 1986, they created and filed a patent for this glass in a tridimensional way, it means that the glass was divided into 3 pieces: the foot, the leg and the bowl. The patent says that the combination of the 3 pieces was the property of Durobor. By this, Leffe was obliged to make his glass in Durobor factory. Due to a need of cash, Durobor sold the patent to Ab Inbev (who is the owner of Leffe now). The implication is that now, the brewery can make his glass where she wants! Durobor has lost a lot of volume because he is not the only supplier since this sale. Why is it an important case? Because before drink a beer, we see the glass and year to year, the Leffe glass is becoming an “institution”. Drink a Leffe beer in another glass is not the same taste. In addition, Leffe use his glass in their advert, it proves that it is very important for them to have the patent. It is a whole, the glass and the beer. Unfortunately I don't know the amount of the transaction but it was quite huge. A lot of money was in the “game”.

In conclusion, at the creation of the glass in 1986, Durobor was not the only player, other glass manufacturer wanted to create THE glass and obtain the patent. Now it is impossible for Durobor the sell the model of the Leffe glass to another customer.

Like:  0

REPLY

**Sylvain Choquet** 3 November 2013 at 13:25 #

The patent race reminds me of a conversation with a manager at Techspace aero. For those who don't know this firm, it's part of the Safran Group and is the major producer in the production of certain pieces of engines for planes, and space shuttles.

This market is highly differentiated, i.e. A lot of firms produce different pieces of the engines, because this allows them to avoid competition on their market. Techspace aero has a wide range of patents concerning their parts which makes them the only producers of these parts. The manager told me that this allows them to be highly advanced compared to other producers because they invest so much in R&D that their competitors can not follow. Thus now it's the only firm capable of producing these parts.

While in a monopoly situation, Techspace does not rest and still invests in R&D in order to prevent other firms from entering their market. Their patents represent technologies that will not be used before 20 years, but by doing so, they ensure they will be the only firm to get the market.

The race in this case is only for Techspace, I do not believe a lot of firms invest in R&D to compete with them, but by thinking a competitor would like to enter the market they have an incentive to produce a patent.

Like: 0

REPLY

**Lancelot d'Aubreby** 3 November 2013 at 12:33 #

The pharmaceutical sector is a typical sector of patent races. I would like to take a particular example of a race in which only one of the firms is racing while the others put pressure to make the patents fall in the public domain. The battle is between Novartis and the Indian generic pharmaceutical Cipla.

Novartis lost last year in an Indian law court the battle of registering a new medicine derived from its anticancer medicine "Glivec". The Supreme Court considered that the newness of the medicine wasn't enough important as the derived medicine was only a different formulation of the Glivec and not an innovation. This means that the way is wide open for Cipla and other generic pharmaceuticals to sell cheap copies. Other pharmaceutical companies (Roche, Pfizer, Bayer) are also in trouble with the intransigent Indian Patent Office. Indeed, India decided to offer to its population a quite easy access to medicines regarding its poverty.

On the one hand, some pharmaceutical companies don't have ethics at all. In the case of India they should propose an adapted price. This story makes me think about the Viktor-saga that happened in Belgium last year. Alexion (distributor of Soliris, a very expensive medicine for a rare disease) blackmailed the Belgian government through a media manipulation. They said that the Belgian government didn't want to reimburse Viktor's family because of the expensiveness of the treatment. I'm sure that the R&D process for developing this medicine was very expensive, but above all I think that once companies have won the patent race and file a patent to seize a market niche, they try to take the most out of their monopoly situation and therefore lose sometimes all sense of humanity.

On the other hand, the decision in India is very dangerous because pharmaceuticals will then lose their incentive to innovate. The R&D costs have to be compensated by the patents' profits. In 2012, The New York Times published an article that states that aspirin could reduce by 30% the probability of developing a cancer. However, in this case, no firm raced for a patent because of the too important R&D costs in comparison with the profits expectations.

<http://www.usinenouvelle.com/article/en-inde-le-difficile-bras-de-fer-des-laboratoires-pharmaceutiques-pour-faire-respecter-leurs-brevets.N190962>

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Like: 0

REPLY

**Anne-Cécile Annet** 3 November 2013 at 11:38 #

In 2009, a race started, a race concerning the development of the potentially next big thing in heart surgery: a replacement valve that can be implanted through thin tubes known as catheters rather than by traditional open-heart surgery.

The contest pitted two major companies, Edwards Lifesciences and Medtronic (CoreValve). Analysts estimate a market for the product that could exceed \$1.5 billion within six years.

Both the Edwards and CoreValve heart valves offer a less invasive alternative to surgery. But the devices differ. The Edwards unit, currently made of stainless steel, is bigger and is deployed when a heart specialist blows up a balloon to position it. By contrast, the frame of the CoreValve unit is made of a so-called memory metal known as nitinol; when it is released, it expands into its original shape, giving structure to the valve. Heart specialists say it is easier to use.

The new valves have been available in Europe since March 2008, with sales of about \$100 million split between the two companies.

I think in this case, the patent provides an incentive for inventiveness and scientific excellence. Indeed, in the hope of becoming the holder of the monopoly, the inventor committed his talent and often substantial financial resources in a race against time and against potential

competitors, as its investment will be lost if the solution he seeks is found by one of them.

The race against the clock to get a patent has a particularly significant impact in the health sector, where the urgency to provide care for diseases considered incurable or develop more reliable therapies is an imperative of medical ethics.

http://www.nytimes.com/2009/10/01/business/01valve.html?_r=0

http://www.uclouvain.be/cps/ucl/doc/etes/documents/Course_pour_brevets_SDAL.pdf

Like:  0

REPLY



Labye Stéphane 3 November 2013 at 01:15 #

When I read this article, it reminded me instantaneously a race that is linked to the universe of videogames. For more than ten years now, two football videogames are engaged in what seems to be a never-ending race. Thereby, Electronic Arts who developed the "FIFA Football" saga and Konami who developed the "Pro Evolution Soccer" saga are the two biggest competitors in the world of the football's simulation. This example might be at first a little bit simplistic for non-gamers people and I agree with that fact. But when you realize that the actual leader (EA) sold this year more than 14 million copies of its videogame "FIFA 2013", this appears to be a quite big market on which I would like to focus here.

Nowadays, the competition between these two giants is not even rough than it has been a few years ago. The reason is that they have reached a level of quality (about graphics, gameplay, and so on) that is so high that it would be currently hard to do better. But a few years ago, I remember that each year in September I asked myself this crucial question: "Which of these two football's simulation will I choose this year?". Actually, year after year, I chose the one who according to professionals improved the best its characteristics.

Thus, without realizing I chose the one who developed the best its capacity to be innovative compared to the other. For instance, Konami has been the leader for many years because during a long period they developed a new way of playing this kind of game (the famous "career mode") that Electronic Arts had not developed yet. But in the same way, EA worked on their licenses to add more and more licensed teams and players (by license I mean the real names, faces and so on).

To my opinion, this kind of race can be very profitable for both competitors. There is no place for the second in this kind of market; they have always wanted to be the first: the first to launch their new opus, the first to add this or that new game mode, and so on. This is literally a race. Each competitor plays with his strengths, while he tries to improve his weaknesses. Basically, each competitor will try to make benefits from his own competitive advantage.

To conclude, I would say that in this example, we can see clearly that a patent race can be a very effective way to make grow one's firm by adapting himself to his competitor while adding something more, something that will give you a leader's position. But keep in mind that this might not be sustainable on a long-term vision.

Like:  0

REPLY



Tiago Fins Joaquim 2 November 2013 at 19:36 #

The term "patent race" implies that companies within an industry aim at one single, clear goal. An industry where patents are of crucial importance is the pharmaceuticals industry. When a new condition appears, pharmaceutical companies will work towards creating a drug that treats the new condition. According to the Thomson Reuters' 2010 Innovation Report, 8% of total patent volume came from the pharmaceutical industry, ranking 5th behind Computers & Peripherals, Automotive, Telecommunications and Semiconductor [1].

In order to encourage innovation, the vital necessity for a clear patent system stems from two factors. First, there are very high research and development costs required in the development of a new drug. 95% of newly developed experimental drugs will never be released, due to ineffectiveness and/or safety concerns [2]. A pharmaceutical company can expect to spend on average \$350 million on a new drug before it's available for sale. Secondly, a drug is relatively easy to copy. Once the drug is available to the public, any company could (in the absence of a patent system) reverse engineer it and sell its own version of it. Since it does not have to amortize the very high R&D costs, it can grab all the demand, leaving the original innovator penniless.

However, some drugs are surprisingly effective to treat multiple conditions. Aspirin, first synthesized in 1897 by German chemist Felix Hoffman, has been proven to being capable of treating conditions ranging from minor headaches to preventing certain types of cancer [3]. It is the most widely used drug in the world [4]. This is then an argument for less a less strict patent system. In the interest of public welfare, the patent system should then make sure that the innovation eventually becomes a public good but it must be strict enough to ensure that there are enough motivated participants at the beginning of the patent race.

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Like:  0

REPLY



Sarah Lorant Dourte 2 November 2013 at 12:50 #

To illustrate the patent race I chose the publication race. Researchers face a pressure for publications that determine in part their access to academic positions. Moreover only the first paper about a specific subject will be published in the top revues. The other studies that are too similar to the first one will be published in less prestigious revues. This leads to a race for publications.

There are three main effect of that race. The first one is that it occur a competition among researcher to work faster and publish first or to adopt an innovative view in order to differentiate from other publications.

The second one is that there could be a waste of time and resources because a lot of researchers are doing almost the same job. But is it really a problem for publication? We could argue that publications are never exactly the same so they can all bring something to the society.

The third one is linked with the first one: There is a risk of fraud in the publications. Because they have to be the first one to publish to have access to a good revue, researchers have an incentive to invent data's or to do a rush job which isn't good for the society.

LE MONDE, Les chercheurs sont prisonniers d'une course à la publication, http://www.lemonde.fr/idees/article/2011/01/21/les-chercheurs-sont-prisonniers-d-une-course-a-la-publication_1468155_3232.html, 21/01/2011, consulté le 2/11/2013.

Like:  0

REPLY



Valerio Serse 2 November 2013 at 10:32 #

One example of patent race could be the one among the biggest electronics company, such as Google, Apple and Samsung, on the field of wearable computers. The wearable computers are small electronic devices with many different application that can be wear by the user. The two main features that make these devices a potential good product on the electronics market are the constant interaction between user and computer, and the ability to multi-task.

One of these devices are the "smart glasses", a kind of smartphone with various apps in form of wearable glasses. Although the idea of glasses as wearable computer wasn't completely new, the first company that was interested (publicly) in the development of this new device was Google. In fact, since few years the American company is involved in a big R&D project to develop the so-called "Google Glass". In August 2011, Google filed a patent on the product in order to commercialize it for the end of 2012, but the launch on the market was repeatedly postponed. However, the company has announced that the glasses will be commercialized before the 2014.

But, unfortunately for Google, they are not the only firm interested in developing this new technology. During the last two years, many others big companies are filing patents on a similar product.

- In May 2011, Microsoft filed a patent for a pair of digital glasses that, in the creator's opinion, could be used to overlay statistics about sports. This device is still not available on the market and the day of the launch is at the moment unknown.
- In June 2012, the big Japanese company Sony, has filed a patent for a kind of smart glasses that allow users to share data on the fly and to be connected with other different devices, such as smartphone or smartwatch .
- One Month later, Apple has filed a patent called "Peripheral treatment for head-mounted displays". This patent is about an head mounted screen that project images into user's eyes creating an immersive experience.
- At the beginning of this year, the Korean company Samsung reveal to the public that is investing heavily in the field of wearable computers, and in fact a couple of months later, on 8 March 2013, the company has filed a patent on a wearable eyewear device. This glasses present many differences compered with all the others and are viewed by the creators as a useful tool to play sports.

As we can see, it seems that many big companies are investing in the development of a similar electronic device that is still not in commerce. Anyway, all the patents mentioned above are slightly different from each other, therefore they could be addressed to different costumers and sold in different markets. Basically, this means that is possible to have many winners in the emerging production of the smart glasses, and that each company will have a return on its investment in R&D.

However, some of these companies could think to be involved in a race and that there will be just one monopolist on the smart glasses market, and in my opinion this scenario is highly possible. This product has one important characteristics, the compatibility and integrability with other devices. This feature, typical of all network devices, gives an added value to the user that is part of the biggest network, so that, in the long term if all this new smart glasses won't be integrated and compatible each other, is likely that there will be just one big producer. Moreover, isn't sure that all these firms that are filing patents will eventually produce this product. In fact, is possible that some of these company, believing in the success of a new potential product, have decided to invest in research in order to patent some invention that could be licensed to other firms.

In conclusion, I believe that this is an example of good competition in R&D to patent a new product. All this companies, competing to make a new product, are increasing the quality of it. However, it's likely that someone is going to fail, therefore, someone is going to vanish all the efforts and the resources invested in the development of this new product. But this could happen also in case a company is developing a new product without any race against others competitors. The race to patent the smart glasses will just increase the probability of R&D

failure for each company (that was already existing) but it is likely that costumers will have a better and more complete product. For this reason I think that in this case there is more gain due to the increase in quality of the product than losses due to fail in R&D.

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Like:  0

REPLY



Diogo Machado 1 November 2013 at 22:06 #

I guess this race for comments is probably being effective, usually there are not so many early comments. The winner takes it all effect is decreasing the number of limited fish in the pool, but as there is wider menu of potential non-infringing ideas, one just has to be more and more creative.

So, with the decreasing number of available fish, I will start going back in time to find resembling situations. I am going to the 15th century!

A small country in the westernmost point of Europe, Portugal, initiated the exploration of the Atlantic see in the middle of the 15th century. It was followed by its neighbouring Iberian rival, Spain, late in the century. This process required a huge investment in navigational knowledge and in capital and human resources. The risk was also tremendously high, several vessels wrecked and a huge number of sailors died. Notwithstanding, there was an aggressive race for the exploration of the seas and discovery of new lands, later followed by other European nations. Of course there were big incentives to embark on this adventure, the first to discover a land had the possibility to colonize and extract its precious resources. Besides, trade monopolies would be created. As a result, the Portuguese found the sea route to India gaining the trade monopoly of spices and colonized other countries extracting their resources. The investment in knowledge and the risk taking attitude, made this small and relatively poor country as well as Spain, the most powerful nations in the world at this time.

Portugal and Spain, both knew how risky it was to spend so many capital and human resources in this uncertain activity. And to make things worse, both knew it would be possible that the other would find most of the profitable lands before, leading to a tremendous waste of capital and lives. It is the same as the winner takes it all effect, but at a much more dangerous dimension. To solve this issue, the two nations decided to collude, creating a duopoly. In 1492 they signed the "Tordesilhas Treaty" dividing the world in two, America for Spain and the rest of the world for Portugal. As the Portuguese started before, they had more knowledge on the matter, so they required some more miles to the west, allowing them to also get Brazil.

This first step in globalization was probably one of the most costly innovation processes. It undeniably increased our knowledge of the world and started connecting different cultures of the planet. However, besides the creation of trade monopolies, the incentives for this innovation unfortunately led to a barbaric destruction of several American and African native cultures, a horrible abuse of the duopoly position.

Surely a bit far-fetched, but here is an example of an innovation process. The kind of patent race led to huge investments and to solve the possible winner takes it all situation and consequent waste of resources, the agents colluded. There are some examples of R&D alliances between firms, but one lesson one may take from the "Tordesilhas Treaty" case is that if one agent has more information than the other, it is likely to take advantage from it.

Like:  0

REPLY



Luis Corchon 2 November 2013 at 15:47 #

Very good example. But if you interpret probabilities as shares in the pie the theory could be worked out allowing for bargaining among the contestants. In my 2010 ET paper (with Matt Dahm) we show that some well-known contest success functions can be interpreted as arising from the bargaining of the contestants. Thus the distinction between non-cooperative and cooperative theory is thinner than many people thought.

Like:  0

REPLY



Ludovic Verbeke 1 November 2013 at 19:17 #

When I read this article, I immediately thought of few specific cases which show that the first company was not rewarded to have won this "patent race".

It's for instance the case of De Havilland. It was a British aviation manufacturer and was responsible for producing the first public (passenger) jet. The name of this airplane was "De Havilland Comet" and inaugurated its first flight in 1949. Unfortunately Comet is quickly in

charge of some accidents due to a lack of strength of the structure. It's why at present one of the biggest producers of jet is Boeing (707).

What I want to demonstrate is that a patent is not the ultimate guarantee to secure a dominant position in the market and we can observe it in a lot of examples which show the same problematic like video games (Atari was the innovator, Nintendo the follower). It's clearly workable to succeed with a copycat strategy. Here I found some advantages to be the "imitator".

- second generation technology
- shared experience effects
- reduced information costs
- access to distribution already open

...

Hence it's why I'm a little bit septic when I read that the popular way to model the link between competition and innovation is to assume that firms engage a patent race. While certain companies opt as strategy to imitate the pioneer and do not spend a lot of time and money in R&D.

Like:  0

REPLY



Suzanne Beguin 1 November 2013 at 11:48 #

The term « patent race » reminds me the "arm and space race" between the Soviet Union and the United States after the Second World War. By reading a little, I found that this war actually began just after the discovery by the two allies of German rocket station and when US realized it has lost its monopoly on the atomic bomb (in fact USSR exploded its first atomic bomb). Since, the two forces compete in an arm and then a space race that led to the invention of the hydrogen bomb, satellites, humans in space and the conquest of the Moon.

This competition was not an economic (although there were some economic issues), but we can find some similar characteristics with firms competition. As the US has lost its monopoly, it has to face a new competitor, USSR. Suppose they are to firms in the same industry, the industry of space, they both need to make investment in R&D in order to find new technologies that would lead them to the space conquest. Investments made by both are huge; efforts too, by only one will be paid. The competitors may choose to patent or keep secret their innovation, but spying services are developed in both sides.

The story showed that this race, despite the large loss of money and time due to bad and double investments, allowed some success in education, technology,... . In fact, more progresses were made in mathematics, physics, and thus all new technologies we can afford now (the internet for example). As for this space race, patent race may be harmful for a time, but I think than in term of innovation, it's always beneficial in the long run.

Like:  0

REPLY



Tomè Clarissa 31 October 2013 at 20:45 #

I would like to illustrate a particular example of patent race, that is, the case of patent race for SARS virus.

SARS (Severe Acute Respiratory Syndrome) started spreading in China in November 2002. The WHO (World Health Organization) coordinated an international team of scientists and researchers for the rapid discovery of the SARS virus. Data and information were shared within the group. Anyway, some research groups started a race to sequence the SARS virus with remarkably speed, followed by a race to secure credit and commercial rights to their findings. The main contenders were the British Columbia Cancer Agency (BCCA), the US Centers for Disease Control and Prevention (CDC), and the University of Hong Kong (HKU). These research institutions filed provisional patent applications in respect of the complete genetic sequence of the coronavirus, being allowed to claim rights in most diagnostic tests, drugs, and vaccines. These publicly-funded agencies argued that it was necessary to file patents in order to protect public access to the scientific information and research, and pre-empt commercial applicants from obtaining patent rights that might hinder further research and development on SARS. This was considered a sort of "defensive patenting" in order to prevent others from creating a monopoly and abusing of it.

I find this example very interesting because here we are not dealing with firms but with publicly-funded institutions, but there are some similarities with respect to the case of patent races implemented by firms. Here, the institutions pursued the same goal and wanted to be the first to reach it and patent it in order to avoid other actors (in this case commercial applicants) to discover the innovation, patent it and create a monopoly. So they wanted to gain excludability rights and create a sort of a niche. What is different is that these institutions did not want to prevent other public institutions to use their discoveries but their action was against private commercial actors.

According to me, this is a good example to be analysed because it's interesting to see how institutions different from firms could be involved in a patent race. I think that when thinking of pros and cons of patent races, also this kind of example can be analysed in order to have a complete view of the phenomenon.

Like:  0

REPLY



Valentine Lowagie 31 October 2013 at 20:17 #

The example I give here is probably one of the first patent races : the race to patent the telephone. This race opposed Alexander Graham Bell to Elisha Gray. They both and independently designed an apparatus that could transmit speech electrically but Bell applied for a patent to the USPTO just two hours before Gray, on February 14, 1876, winning the race. The application filed by Gray was a caveat which is a type of preliminary application for a patent that allows the inventor to refine its invention and file a regular patent application within the three months. Sometime later, Gray filed a lawsuit against Bell but the courts awarded the patent to this latter.

However, there is controversy about this patent. Indeed, among other people, the science historian Seth Shulman, accuses Bell to have plagiarized Gray's invention of the telephone. In fact, Bell had been working on his telephone project for months without success when he suddenly found a method to make it work. Shulman first thought that this sudden breakthrough was an evidence of Bell's genius but he realized that Bell visited the Patent Office a short time before he found the method. Shulman thus accused him of having (illegally) consulted Gray's application.

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Like:  0

REPLY



Bertrand Ribonnet 31 October 2013 at 18:11 <#>

After some researches on the Internet about this topic, I found an interesting example of patent race: food for humanitarian purpose. This is interesting because of the product itself but mainly because of the ethical question that may arise for products of this type.

It seems that a French company found and patented a new long lifespan pasta with the taste of peanut. Contrary to milk powder, this pasta doesn't need added water so that the bacteria's cannot develop. Knowing the difficulties to find drinkable water in some countries, this feature is a major competitive advantage.

Two American firms that took part to the race have already contested and sued the French manufacturer because they also want to produce this "magic" pasta. According to them, children are dying because of these patents preventing other firms to produce their own pasta. On its part, the inventor gave access to the patents but only to African factories. They obviously don't want to see their northern competitors entering the same market.

This situation shows that even in very sensitive markets, the more rational reasonings are implementable. Indeed with a growing number of people living below the poverty line, there is a lot of money at stake. Shouldn't we be concerned about the building of a monopoly for such an issue? Can patents be granted in this situation?

Like:  0

REPLY



Marie Khamphanh 30 October 2013 at 21:35 <#>

The biotechnology industry and more particularly the GM crops sector is driven by a fierce patent race. My example is based on an article named "Climate Ready GM Crops: The Patent Race", written by Rajesh Chhabara. The main competitors are from various countries such as Switzerland (Syngenta), France (group Limagrain and Dupont), Germany (Bayer and KWS) and the USA (Dow Agro Sciences, Land O'Lakes and above all Monsanto). These firms have already patented more than 530 applications which represent 55 patent families. Monsanto has patented many applications for GM plants which are resistant to the climate change (flood, drought, etc). However, Monsanto and its business partner BASF (an agro-chemical company) aim at detaining more than half of the 55 patent companies (27).

These biotechnology companies have received many criticisms. In this case, they were accused of bio-piracy. The ETC Group defines bio-piracy as "the appropriation of the knowledge and genetic resources of farming and indigenous communities by individuals or institutions who seek exclusive monopoly control, through patents or intellectual property, over these resources and knowledge." Indeed, an Indian environmentalist, Vandana Shiva asserts that these big firms put patents on resistant genes applications that actually exist. He said that these big firms gather seeds which are located in extreme areas (very dry places for example) all around the world. By doing this collect, they assume that these particular seeds would have the wished genetic characteristic. After that, they register the genome in order to know which genes provide this specific resistance to extreme climatic conditions. Then, they add these genes in their transgenic plants. However, Vandana Shiva asserts that Indian growers already employ flood-resistant and cold-resistant seeds in order to adjust to the local climate. He said that big companies don't take into account local discoveries. There are already many plants which are resistant towards climate change. For example, "Dhullaputia" is an Indian flood-resistant rice variety.

Monsanto advocates that this patenting process is fair as they aim at helping farmers, fighting against poverty and shortage. Their researches have also to get a return on investment. Furthermore, ecologists also say that this system only benefit to big companies. With these patents, local farmers will have to destroy their own climate-resistant crops. They will also be bound to buy resistant crops from the main agricultural companies. Activists also fear that these important firms would apply broadly their patent right as they will certainly use the same gene for various plants. The consequences of the patent's application would be terrible for the local farmers' conditions. In fact, it would make them contract more debts to buy new climate-resistant seeds and above all the cost of agriculture would skyrocket.

Activists said that governments should intervene and regulate this patent regime to lower the effect of bio-piracy. The technological applications for biological material is not protected yet by the UN convention on biodiversity. Developing countries have demanded a change. However, rich countries such as the South Korea, Japan, the US, Canada, Australia refuse to do it. This disagreement can be explained by the economic weight of the biotechnology industry as the demand for climate-resistant seeds is increasing drastically.

In conclusion, we can say that patent race has many dimensions. It has an economic side because it improves the larger agricultural companies' profit thanks to the GM applications' patents. Then, it also has a social side. Indeed, it will deteriorate the life of the developing countries growers. Finally, the patent race has a political dimension because the transnational companies and the states must regulate it.

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REPLY



Lukas Kelling 30 October 2013 at 19:29 #

What comes to my mind as the most striking and as probably one of the earliest examples for a situation similar to a patent race is the „War of Currents“, a dispute over different technologies for electricity distribution in North America. The long-lasting argument was carried out in the late 1880s mainly by Thomas Edison, promoting the technology of direct current (DC), and George Westinghouse, supporting the alternating current (AC). While Edison's system was already partially established, for instance in New York City, it wasn't suitable for the transmission of electrical power over long distance, requiring each commune to build their own power plant and other massive investments in infrastructure, such as inefficiently thick power supply lines. Westinghouse acknowledged the issue and started publicly combatting Edison's approach with his AC technology, which was more efficient in means of transporting (over a long distance) and also distributing electricity to each single lightbulb it was providing with power. While both company's were conducting shocking experiments in the public, such as electrocuting animals with the other one's respective current-technology, their biggest advantage (and likewise their competitor's biggest problem) was the patents they had been granted. As the main use for electricity at that time was providing electrical light, Edison's company was clever to obtain patents on his invention, the most popular lightbulb which at the time already has been used to light countless rooms and hotels in some cities. In contrast, Westinghouse owned several wide-breadth patents revolving around his AC technology and related power-generating devices. As the dispute continued, each company enforced their patents in such a way that would prevent consumers from using their respective competitor's incompatible technology, thus excluding them from the market. For instance, Edison required consumers to only use his company's lightbulbs along with his DC power supply network by means of licensing and in doing so restrained and oppressed potential innovation and the uprise of competing systems concerning electrical infrastructure, like Westinghouse's system. Eventually, after years of mutual patent filings, restrained competing innovation and deadweight losses at the expense of the society, Westinghouse's AC technology slowly gained market share, later becoming the worldwide default system which is in use to date.

The situation I'm describing in my comment can be titled as „format war“, as it's a dispute over which technological way of achieving a goal in a certain market is going to be accepted as the default and standard one. There are several similarities to a patent race, as for in this example, the „winner takes all“ nature: Westinghouse in the end accomplished to push his system to worldwide success, whereas Edison's technology has not been in use since. Another important aspect is the long-term exclusion of consumers by not providing mutually compatible technology: Edison's approach required each town to build its own expensive power plant, which left rural areas, huge parts of the countryside without electricity. This could have been avoided by Edison licensing his lightbulb to be used along with the power distribution technology by Westinghouse. Thus, this special kind of patent dispute can exclude large parts of the society to benefit from helpful inventions. On the other hand, the pressure caused by competition accelerates the process of innovation, producing a growing number of inventions which are beneficial to society.

Like:  0

REPLY



Hippolyte Dispa 30 October 2013 at 18:39 #

One striking example of patent race that immediately came to my mind is the ongoing race for the development of flexible phones. The idea of flexible phones has emerged in the past years but has lately started to materialize itself. The latest incarnation of that new trend is the Galaxy Round, a new smartphone equipped with a concave and tactile screen that has recently been launched by Samsung. As LG and Samsung have been fighting over OLED Technology patents – the technology used for curved screens – since the alleged theft of LG's technologies by Samsung, it is not surprising to hear that LG will itself soon launch a curved-screen phone called the G Flex. Batteries and inner components have been modified to suit the revolutionary shape of these new smartphones. These examples display strong evidence of the firms' desire to be the first one to seize the juicy price that would be patents for a flexible phone.

However concavity is not a synonym for flexibility. And while curved phones are now a reality, it is very unlikely that flexible phones will appear any time soon. Despite the fact that we will have to wait quite a while before seeing them around, flexible phones are being developed and Samsung and LG have already emerged as the two most advanced companies in the field. Flexible phones are the next logical step in the process of turning phones into a multitasking and ever more adaptable device. They would better adapt to a man's pocket and would not get scratched in a woman's purse and most of all, they would survive the regular drops that are actually death warrants for regular phones. However big challenges lay ahead and are still pushing back the release date. One of them is manufacturing components

that can embrace the changing shape of the external shell but as Stephanie wrote in her comment, graphene has shown promising results. Companies such as Samsung and LG believe that flexible phones are not a niche product but the next big thing and are actively working to develop them. The ongoing dispute about patent thefts and mutual accusations express the highly intense battle that is the race to the flexible phone and its golden patents.

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<http://singularityhub.com/2013/10/03/samsung-promises-flex-screen-phone-by-the-end-of-the-year/>

Like:  0

REPLY



Frédéric Anaëlle 30 October 2013 at 17:46 #

Before to start, I would like to call to mind that, recently, U.S. patent law switched from a first-to-invent to a first-to-file system. Now, you need to be the first. Indeed, the first to arrive wins the prize : a patent !

That's why I think that patent races are more than ever significant in a company. Specially in some sectors.

An example of industry where we can find patent races, I think, is the tablet computer's industry.

Indeed, the competition in this sector is really strong. Even if the iPad is the most sold tablet computer in the world, there are a lot of competitors who have a similar goal : try to offer the best tablet in the market.

That's why they always have to find new things which could improve this product. The best way to do that is to invest a lot in Research and Development. Then, when they found something new, they have to be the first to file a patent in the hope of seizing new consumers.

However, like it's said in the article : « patent races have the potential disadvantage of generating wasteful duplication of efforts ». This is specially true in a sector which use latest technologies like the sector of tablets computer. They have the same goal and so, it often happens that they are looking for the same innovation, or a very similar innovation.

It's already happened that a company was in a lawsuit because of one of its innovations was too similar to another innovation of a competitor.

Like:  0

REPLY



Brasseur Amandine 30 October 2013 at 14:53 #

I found an example in the book: "Industrial Organization: Markets and Strategies" by Paul Belleflamme and Martin Peitz.

This example is the automobile manufacturers who are always competing to make cleaner cars. Of course, actually the respect of our environment is one of the most important public concerns. A company able to show that she can provide an improved product in regard with environment (to develop a green product) has a competitive advantage on her competitors.

Thus, companies in the mobile industry invest in R&D to be the first one to find a new way to make cleaner cars.

We cannot say who will win this race because when a company finds a new innovation, the others continue to invest in R&D to improve again the cars.

In the course of time, the manufacturers change their position on this race. As it is mention in the book: "Toyota seems to have taken the lead of the race with its gasoline-electric hybrid, the Prius" (p. 490). But new events can change the leader, even an event not related to this industry. Indeed, Telsa Motors (firms outsidess the car industry) proposes a greener car than Toyota. Obviously, those cars don't concern the same customers (Telsa Motors' car is a sport one) but this technology can be used for other kind of cars.

Moreover, there are the new entrants. Maybe the winner of this race isn't in the market yet.

In conclusion, the patent race to find a way to make cleaner cars is a good situation because it's a strong competition market structure.

Furthermore, we can observe a big number of firms (in the car industry or not) who want to reach the same purpose by investing in R&D and patenting their innovations.

Like:  0

REPLY



Jean-Baptiste Ledoyen 30 October 2013 at 14:05 #

The picture immediately reminds me that we can find many patent races in sport! One of them, which probably have the biggest impact, with the Football World Cup, are the Olympic Games. The race to be the host country of the Summer Games is just like a patent race.

Countries compose committees which build application file. They secretly work during several years to show they are the best, they do lobbying, etc. Projects are as successfully completed as project of companies which loose the patent race. To be persuasive, they have to show concrete actions are already done, just like companies which test and retest our product in order to be able to patent their idea!

The difference is that's not the first to finish its patent, but the one which is the most persuasive, the one with the best arguments. This one will win the race to be the host country. When it achieves this level, it's the jackpot, like patent.

Indeed the label "Olympic Game" is very rewarding, and looks like a patent. Only one country can have the label for an edition and that leads it to a lot of "advantages" related to other countries. If for companies advantages are market share and so profit, here it's quite different. Host country can expect a huge visibility during the OG but also before and after the event, and on all the medias, all around the world! That brings a lot of tourists and sport lovers to come to the host country, to attend sport's event or just to take part in the "party" and to visit the country/the city.

Benefits are for several sectors : Horeca – Hostel – Trade – Employment, etc. In addition to these direct benefits, we can't forget that OG require numerous of infrastructures! Sporty complexes are build for the Games and may be used by athletes and sportsmen after the contests. Public spending, needed to build the sites, allow to boost employment by enrolling local companies before the Games. But they also allow to boost the wish to do sport after the contest (thanks to the publicity of sport during the event) and to offer better infrastructures to all sportsmen and to athletes for their better development.

So we can assimilate the organization of the Olympic Games (and some other big sporty events) to a patent. It has around the same advantages than the patent, but has a quite short length. One of the difference is that after the organization (when the "patent" is over) consequences of the end of the patent are very different. Competitors aren't on the same market (the following host country will never steal tourists to past host countries), there are a lot of tangible benefits (infrastructures, employment, etc.), business is different (people don't come to attend OG, but as travellers, tourists), etc.

Like:  0

REPLY



Luis Corchon 30 October 2013 at 16:42 #

This is a very good example. In fact a patent race is a special case of a much more general situation which we call a contest where contestants spend effort in order to win a prize. Examples include

1. Political competition. Political parties try to get office. To influence voters they advertise, or buy votes.
2. Litigation/War. Contest for a resource (land, mineral). Contestants spend in lawyers, armies.
3. Lobbying. Contest for a public policy (subsidies, regulation). Contestants spend in bribes, advertisement.
4. Awarding a prize/contract. Nobel prize, Procurement. Bribes, Preparation expenses.
5. Sports. Teams try to win a competition. Expenses are team budgets.

Like:  0

REPLY



Paul Belleflamme 30 October 2013 at 17:38 #

You're perfectly right Luis. Thank you for your comment.

REPLY



Solène Thibaut 30 October 2013 at 12:55 #

As an example I would give the strong competition in the smartphone industry and the fact that Elliptic Labs is launching ultrasonic gesture control. Indeed, it uses sound waves instead of light which allows the consumer to control his phone from 3 feet away and in an angle of 180 degrees around the phone. It also uses a very small amount of energy.

What is remarkable in this new technology is that there has been a lot of competition around gesture control lately and that each company in the race for "the commonly accepted new technology" has come up with a different solution. For example, we could quote Samsung that has put a device using infrared light in its Samsung S4 or Microsoft Kinect that uses the same technology. Also, Disney that tries to make its audience feel the textures and edges of an object through vibrations.

We will have to see how it evolves but it seems for now that Elliptic Labs may have won that race with its revolutionary device because it outdistanced all its competitors by already producing it and because it seems to have a lot of great advantages.

Concerning that specific example, I would say that racing for a technology is a good thing because it gives companies in different sectors, such as Disney, the occasion to step into the race and come up with a solution to another need using the same technology. What I mean is that if there were no race and "racket" about this, Disney may not have had the incentive to develop or opportunity to come up with such a device. This conclusion could not apply for all industries and cases but in this case, I believe that the race has a positive impact on social welfare because it gives opportunity for more diversity.

Like:  0

REPLY



Goergen Stephanie 30 October 2013 at 09:17 #

An example of patent race represents the graphene market. Graphene was identified in 2004 by professors Konstantin Novoselov and Andre Geim. Since its discovery, market analysts have deemed graphene an industrially disruptive technology which is causing “the development of an infinite array of new processes and products – innovations that range from nanoscale medical devices that target individual cancer cells with chemicals – to the re-engineering of aircraft components” (<http://investorintel.com/graphite-graphene-intel/the-global-graphene-race/>).

Graphene is only one carbon atom thick. It is at once transparent, flexible and stretchable and is 200 times stronger than steel. Moreover, as a mineral, it is a better conductor of electricity than copper, or silver. In bio-medical applications, graphene kills bacteria and provides a sterile environment for growing skin cells for burn victims. Its many possible uses in different fields (e.g. medicine, electronics, energy saving, etc.) make it worthwhile for many industries and technological fields to invest in the research of graphene for commercial application development. These firms are pursuing similar goals and filing patents in order to claim their share in the potential massive value which the material could represent in the future.

Until now, there are around 7,500 global patents related to graphene. UK and European researchers and corporate developers only registered less than 100 of those patents whereas the majority of patents is hold by China, followed by the United States and Korea. Among individual corporate and academic graphene developers, the top three global patent owners are: IBM, Xerox Corp and Samsung. All these actors desire to lever graphene’s numerous advantages and to develop a leading global position in graphene application development in order to capture and dominate future markets.

References: <http://www.dw.de/uk-losing-out-in-graphene-patents-race/a-16576369>

Like: 0

REPLY



Alexandre Faber 30 October 2013 at 01:24 #

The photovoltaic industry could possibly be an example where race to patent was present. As our concern for the environment gradually grows stronger (nevertheless sluggish, one may say) demand for green electrical power is rising. One possible source of such renewable energy stems from solar radiation that is transformed into electricity through the method of photovoltaic, employing solar cells. There have been a number of innovations, like the movement of the solar panel with the sun to increase the daily exposition to the sun and thus the electricity generated. Most importantly however, companies have sought to increase efficiency and reduce costs of the solar cells. This is where most R&D investments have gone to. The graph in the following link shows the development of efficiencies for different solar cell technologies over the past 28 years: http://en.wikipedia.org/wiki/File:Best_Research-Cell_Efficiencies.png. Although this is only my personal visual judgment of the graph, I think I recognize a revival of efficiency increases beginning around the year 2000. For sure, new technologies, especially on the bottom efficiency end and at the top efficiency end, have emerged during that period. This could all be due to the prospect of increasing demand (so that the commercial risk of innovation is reduced) that might then have spurred renewed interest in R&D in renewables. Furthermore the technologies on the bottom and upper end of the graph have undergone some considerable increases in efficiency (from below 4% to above 10% for the red dotted curve; from 32,6 to 44,4% efficiency for the purple triangle curve). Consistent with this, figure 5 in Lizin et al. (2013) shows how the number of patents for OPV (the photovoltaic technology red dotted curve) have steadily grown in the past 14 years. This is the product-innovation part of the story. On the other side, there also is a process-innovation part of the story, with for cost-saving innovations. Competition on the market for solar panels seems quite harsh (recall the trade dispute of the EU, mainly on the insistence of Germany, with China: <http://www.bloomberg.com/news/2013-08-02/eu-solar-panel-accord-with-china-approved-by-european-commission.html>) and companies seem to compete on two fronts: efficiency and costs. Perhaps innovation in one or the other direction alleviates competitive pressure and attracts enough demand, so that a patent race could be triggered...

Lizin, Sebastien, Julie Leroy et al. (2013): “A patent landscape analysis for organic photovoltaic solar cells: Identifying the technology’s development phase,” *Renewable Energy*, 57: 5-11.

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