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# Patents in the Real World



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Patenting, like politics and religion, tends to bring out the true believer in some people.

Simply mentioning the word "patent" at a technology gathering, for example, is likely to produce an absolutist harangue from someone about why intellectual property is either the single greatest innovation enhancer in human history, or conversely, the most perverse economic evil ever devised by man. For some people, it's all black and white when it comes to patents.

Even a seemingly-inarguable fact like the 2008 Berkeley Patent Survey's finding that most entrepreneurs find patents helpful in attracting financing for their startups can lead some anti-patent activists to suggest that perhaps entrepreneurs aren't capable of accurately assessing their own experience with patents and are instead simply the victims of a collective delusion.

So I propose to dispense with the usual histrionic theorizing about patents and instead look at the very practical role they have played in my 35-year career as a high-tech entrepreneur, investor and CEO. I had a front-row seat, after all, to some of the most exciting innovations of the post-World War II era, including the invention of interactive computer networks, voice mail and multiplexed voice-data communications, the Internet, mobile telephony and smartphones, software as a service, and new semiconductor miniaturization technologies that enable the creation of ever-smaller cameras, cellphones and other electronic devices. And patents certainly played a greater or lesser role in the development of all of these new industries.

But looking back, what strikes me is the surprisingly-variable role that patents played in the growth and success of the half-dozen trailblazing startup companies that I helped lead. For these startups, which collectively created more than 2,500 jobs, I raised approximately \$1 billion from strategic and venture investors (who ended up with \$3 billion in returns). And in the majority of cases, owning patents proved to be crucial to the funding and commercial success of my startup.

But this wasn't always the case. In several startups, patents were almost completely irrelevant to either the financing or the ultimate fate of the company. Understanding why this was so may offer some insights into both the value and the limitations of patenting.

My first C-level job was at Telenet, the world's first packet-switched communications network and the first to offer email service, called Telemail. The company was the brainchild of Dr. Larry Roberts, the Defense Advanced Projects Research Agency (DARPA) researcher who in the late 1960s had designed and led the project to build the world's first interactive computer network, called ARPANET. While still at DARPA, Roberts approached AT&T about taking over the network that would eventually become today's Internet.

"I tried to get AT&T to take over the network, but they refused," Roberts recalls. "This was a major decision on their part, and it was a disaster for them. I told them I'd give them the whole network, and they could charge DARPA for it while they built it up for commercial use. They had this big committee of executives consider the idea, but they eventually came back and said, 'It's not compatible with our telephone networks or our philosophy.'"

This is not the first time, of course, AT&T discounted the possibilities of new technology. A few years earlier, a similar high-level AT&T committee had studied the commercial potential of cellphones and concluded there would never be enough users to build a real business from it.

So Roberts launched his own carrier, which he called Telenet, in 1973. The startup received funding from the

then newly-emerging venture capital industry — the only other startup that received venture funding that year was Federal Express — and executed a successful IPO a few years later. It was acquired by GTE in 1979 and became the data division of Sprint.

Interestingly, patents played absolutely no role in either the rollout of packet-switched communications networks or in the success of Telenet. Roberts explains why:

“We had already invented packet switching technology back at DARPA, so it wasn’t patentable by Telenet,” he notes. “Also, our X.25 packet-switching protocol had been adopted as a standard, so patents would have actually slowed its adoption. Finally, patents just weren’t important to the investors. We intended to commercialize this exciting new packet-switching technology, and the plan was simply to move fast and build acceptance as a data carrier.”

So there you have it. The first major public data network — built around packet-switching technology created in government research labs — did not require patents for its success.

Patents played a more important, albeit still mixed, role during my first CEO position as the head of David Systems, a venture-backed company that pioneered the convergence of voice and data. We developed a proprietary technology that enabled the transmission of voice, data and Ethernet over a single twisted pair of wires, which was quite revolutionary in its day. And our patents on that technology definitely helped to attract investors. But those patents could not produce commercial success when the marketplace ultimately chose a different (10BaseT) version of Ethernet. We eventually sold David Systems to Chipcom for a modest price.

My next venture was Concentric Networks, the first nationwide Internet service provider with a guaranteed latency backbone, where I was CEO from 1995 to 2000. I raised Concentric’s \$10 million first round of venture financing from Goldman Sachs and Kleiner Perkins, with the famed Sun Microsystems founder Vinod Khosla the lead investor. And I led the company’s explosive growth to 1,600 employees, a \$350 million revenue run rate, and a successful IPO in 1997 that raised \$70 million. The 6<sup>th</sup> fastest-growing public company in America in 1999, Concentric won the Best ISP Award and the Most Innovative ISP Award at the Interop trade show that year. In 2000, we were acquired by Nextlink (now XO Communications) — whose CEO at the time, Dan Akerson, is now the CEO at General Motors — in a transaction valued at \$2.5 billion. I served as vice chairman of the board for a year after the merger.

Concentric is an interesting case when it comes to patents. As an ISP, we obviously saw ourselves as a service business and therefore didn’t patent as heavily as startups did in other tech sectors. Nonetheless, one

Concentric patent for our “clustered hosting architecture” proved to be vital, not only in maintaining our market advantage and preventing rivals from copying our advanced technology, but also in our marketing strategy. As all of our PR at the time noted, “Concentric is the only solution awarded a U.S. patent for its Web clustered hosting architecture — a unique platform designed to deliver superior performance, reliability and security. We’re not just ‘one of the crowd’ of hosting providers competing on low price and traditional solutions.”

Another important point: Our “Concentric Host” offering produced much higher gross margins than our other non-patented service offerings.

My next job after Concentric was as chairman and CEO of Endforce (formerly SmartPipes), a network security software startup, where I was involved as CEO and then non-executive Chairman from 2001 to 2005. Endforce was a pure software play, and although we applied for and received several patents and certainly touted these as part of our story to investors — the most prominent of whom was John Doerr, who financed Google and Amazon, among other iconic companies — I don’t believe in this case that patents were especially material either to the firm’s success or to anyone’s decision to invest in the company.

Danger, however, was a different story entirely when it came to the critical importance of intellectual property to the ultimate fate of the company. Danger was cofounded in 2000 by Joe Britt, Matt Hershenson and Andy Rubin, the latter of whom also went on to develop the Android operating system for Google’s new smartphone platform. We developed a highly-regarded smartphone, branded the T-Mobile Sidekick and the HipTop in different markets, that uniquely combined software as a service with online messaging and social networking services. It was especially popular among teens and young adults, and our integration of social networking with MySpace, the hot social network of the day, was way ahead of the curve at the time.

Shortly after I took over as CEO at Danger in 2002, however, investors grew concerned about the intensifying competition in smartphones generally and mobile email especially. So they demanded an independent legal opinion on the validity of our patents and the non-infringing nature of our technology before they would commit \$36 million in Series D round financing.

That legal opinion cost us \$100,000 and the diversion of significant engineering resources, both of which could have been put to use hiring more employees or intensifying our R&D efforts. But it did serve to mitigate the concerns of investors, who needed assurance that Danger had a sustainable advantage in this increasingly-crowded and competitive space.

But how reliable is that assurance when the patent office itself, as the ultimate guarantor of the validity of any patent, is crippled by a years-long backlog of unexamined applications and forced to use obsolete searching and examination tools? Danger was about to find out.

One of Danger's key patents related to the swivel hinge of our iconic T-Mobile Sidekick cellphone. We applied for that patent in 2000 right after the company was founded, but it took seven long years before we finally got it approved by the USPTO. During that time, however, a very similar patent covering much the same sort of technology was issued to another company, and this other patent was eventually acquired by Wireless Agents, a patent holding company, which then sued us for infringement in 2007.

Suffice it to say that the whole situation was a mess that ended up costing us \$3 million in legal and settlement costs. And the irony is that, in my opinion, neither Danger nor Wireless Agents should have ever received its patents because, as we later discovered, a major Japanese consumer electronics firm had filed for and then abandoned a patent on similar technology before either of us had. The U.S. patent office simply lacked the technological and human resources to uncover the Japanese prior art.

And therein lies a valuable lesson in the uses of intellectual property. Patents can often give a startup an edge in attracting investment and succeeding in the market. But an underfunded and dysfunctional patent office can also erase that edge — and even create a whole new genre of risk for any business whose funding or success hinges upon the validity of its patents.

In the end, however, our portfolio of 100 issued and pending patents proved to be a powerful (though by no means only) incentive for Microsoft to acquire Danger. Microsoft had tried for some time to improve its position in the smartphone market, and Danger provided them with a wildly-popular smartphone that had won numerous "product of the year" awards, had 1.3 million paying subscribers, and a revenue run rate of \$100 million. Our user base was just as committed to Danger's Sidekick in its day as Apple's customers are today to the iPhone.

In acquiring Danger for \$500 million in 2008, therefore, Microsoft got our revolutionary technology and virtually all of Danger's key engineers, who had so brilliantly designed and executed that technology. But Microsoft also acquired one of the most thoroughly-vetted patent portfolios in the high-tech industry — no small matter for a company like Microsoft that spends upwards of \$75 million a year defending itself against patent infringement suits.

Among the "tribal elders" of Silicon Valley, I have a reputation as a "fundable CEO" who can raise significant

amounts of money for a startup. But I also have a fair amount of experience investing in and serving on the boards of startups other than my own. And here, too, my experience suggests that patents are sometimes of very great value to investors.

I served as an outside director of VMX, for example, an early voice mail company that had merged with a private voice mail firm, Opcom, founded by my old friend David Ladd. I can tell you that patents played a key role in the success of the newly-merged VMX, generating 10 percent of the firm's revenues and most of its profits from patent licensing. VMX's intellectual property was also a big draw for Octel, which in 1994 purchased VMX for \$150 million.

Another startup whose board I served on was Ocular Networks, which made next-generation optical gear. Although Ocular did not have a large business, its optical networking technology was regarded as among the most advanced in the industry. And the patents filed on that technology are what enabled Ocular to attract \$10 million in venture funding. They also played no small role in the company's exit. When Ocular was purchased by Tellabs in 2002 for \$355 million, it was the largest venture-backed M&A exit of the year.

Looking back over my career, then, I can say that patents have often — but certainly not always — been a critical factor in either the financing or ultimate success (or both) of the startups with which I've been involved. All of my companies have been acquired — by Chipcom, Sophos, Nextel, and Microsoft — and in most, the intellectual property played either an important or an extremely important role in the deal.

It is also clear that during my career, patents have over time become increasingly important to startups — a trend reflected in the three-fold increase in patent applications over the last 20 years. Some argue that this surge in patenting reflects not an increase in innovation but rather merely the birth of a patent arms race. But this argument has been soundly refuted by economic researchers, who have proven that patents are a good proxy for innovation activity.

Besides, we know from history that America has witnessed similar upsurges in patenting in the past. The mid-19<sup>th</sup> century years of the industrial revolution, the early years of the 20<sup>th</sup> century when the auto and aircraft industries were launched, the post-war boom years when the aerospace, semiconductor and early computer industries were being born — each of these eras witnessed a doubling or tripling of patent applications and grants over a 10-20 year period.

Clearly, whenever the U.S. has undergone an industrial renaissance during which new technology led to the creation of new industries and the reshaping of existing ones, patenting levels have risen dramatically. This is

precisely the sort of economy-transforming renaissance that I have been privileged to be a part of during my career.

And the reason why patents become more important during times of great change is obvious once you look at the issue from the practical standpoint of the entrepreneur or investor. In every meeting I've had over the last 35 years with potential investors in one of my startups, one of the first questions asked — after “What is your product or service and why do you believe there's a market for it?” — is “What is your sustainable competitive advantage?”

If you can't answer that question convincingly, you don't get the money. It's that simple.

To be sure, patents are not the only keys to a sustainable competitive advantage. Many times a first-mover advantage will prove more valuable, as is true of many of today's Web 2.0 software and social media startups. Other times, your advantage will lie in the unprecedented cost-effectiveness, user friendliness, or practical use-value of your new product or service.

But in most real-life business situations — at least as I have experienced them — your sustainable advantage will come from a combination of factors, including an early to market lead, best of breed implementation and execution, or strong patenting and trade secrets practices.

Bottom line, entrepreneurs should never treat patents as objects of worship or of disdain. They are simply one useful component of the successful startup's toolkit — one that often but not always helps to create a sustainable advantage and assure your investors of a healthy return.

That said, however, it's worth noting that in some industries a bullet-proof patent is as absolutely essential to success as oxygen is to human life.

Take the biotech startup Innate Immune, founded by world-famous Stanford immunologist Sam Strober and led by CEO Steve Perlman, the former director of clinical research at Genentech. Innate Immune has developed a radically new treatment for lupus, a devastating disease for which little help is currently available. But seven years after filing for a patent application, the USPTO has still not gotten through its backlog to approve it.

Without a patent to assure investors of market exclusivity, one after another round of venture and strategic investment has fallen through. Today Innate Immune survives on friend and family money while its new treatment languishes on the shelf.

It's a shame, but you can't blame the investors. Does anyone expect an investor to pony up the huge sums needed to commercialize a new medical treatment and gain FDA approval for it without at least the promise of market exclusivity and a healthy return that patents provide?

Of course not. That's life in the real world.

And the real world is where we should try to keep our discussion of patents.

## About the Author

**Henry R. Nothhaft** is the CEO of the semiconductor technology miniaturization firm **Tessera**. He is the co-author, with David Kline, of the upcoming Harvard Business Press book ***Great Again: Revitalizing America's Entrepreneurial Leadership***, due out in early 2011.

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