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Innovation, Disruption, and Intellectual Property: A VIEW FROM SILICON VALLEY

Ted Ullyot has been closely involved with major ventures and developments involving the technology industry in the United States. He is currently a partner at Andreessen Horowitz, a leading venture capital firm in Silicon Valley, where he directs the firm's policy and regulatory affairs group. From 2008 to 2013, he was general counsel for Facebook, leading the process of the firm's initial public offering. His previous positions include serving as chief of staff to the attorney general of the United States, deputy staff secretary to the president of the United States, and a law clerk to the late Justice Antonin Scalia. Ullyot delivered the annual Helen Wilson Nies Lecture in Intellectual Property at Marquette Law School on April 12, 2016. The following are lightly edited excerpts of his remarks.

As a lawyer who has spent the last few years advising companies in Silicon Valley—and who has learned a lot and been surprised by a lot over that time—I thought it might be interesting for this audience of intellectual property (IP) law experts to hear a firsthand perspective on how intellectual property law is viewed and is being “disrupted” (as the phrase goes) out in the valley.

The American technology sector, centered in and around Silicon Valley, stands today as a celebrated leader of innovation, disruption, and economic progress. It is home to companies such as Apple and Google (the number one and two companies in the world by market cap); Facebook, which recently passed Walmart to become number 12, barely three years into life as a public company; innovative startups such as Tesla, Twitter, Pinterest, Airbnb, Uber, and Lyft. And that's not to mention the long list of older, more-established technology companies such as Hewlett-Packard, Intel, eBay, and PayPal.

Numerous factors have been cited as contributing to the valley's success as a hub of innovation. Among those frequently mentioned are strong universities, access

to ample venture capital (with its high tolerance for risk), free movement of labor and talent (non-competes are not enforceable in California), maybe even California weather and Napa Valley wines.

As lawyers, we certainly also can be proud of the role that the rule of law has played in Silicon

Valley's innovation culture—and perhaps no aspect of law more than American intellectual property law, whose fundamental purpose, after all, is to promote innovation.

For this expert audience, it's probably not necessary to demonstrate the linkage between IP law and innovation. But just in case, starting with the Constitution, in Article I, section 8, clause 8, Congress is assigned the power to “promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.” So right from the outset, the stated purpose of patent and copyright law is to promote scientific and artistic progress—i.e., innovation. On trademark, the innovation link is perhaps less discussed and not as direct, but it's still there. As the Supreme Court said (this was in *Qualitex Co. v. Jacobson* ▶▶

... the relationship between intellectual property law and today's tech innovators is, as the kids say these days, complicated.



Ted Ullyot

Products Co. in 1995): “[T]he [trademark] law helps assure a producer that it (and not an imitating competitor) will reap the financial, reputation-related rewards associated with a desirable product.”

Surely, therefore, IP law has played a critical and well-appreciated role in tech innovation. But the relationship between intellectual property law and today’s tech innovators is, as the kids say these days, *complicated*. And that’s what I want to focus on in my remarks.

Specifically, it’s complicated in two ways.

First: The prevailing view in Silicon Valley today is that IP law is prone to being abused. To be sure, the potential for abuse is a feature of any legal or regulatory scheme. But when it comes to IP law, it’s not simply that the laws are being abused but also, more specifically, that the abuse ends up hindering innovation. So whereas patent, copyright, and trademark laws are designed to promote

innovation, according to this view they’re being misused in a way and to an extent that discourages and defeats innovation. Suffice it to say the widespread perception among Silicon Valley technologists today is that IP laws are often more of an impediment to progress and innovation than an enabler.

Second: It’s not just their being prone to abuse that ends up defeating the purpose of the IP laws. In addition, there’s an emerging belief that the fundamental underpinning of American intellectual property law—to wit, the free-market concept that innovation is best achieved by giving inventors the incentive of an exclusive right to exploit and profit from their inventions—is misplaced, or no longer operative. Instead, the increasingly popular view, certainly with respect to software and also with some hardware, is that technological advances are more likely to come through sharing and collaboration than via the exclusive-rights paradigm of traditional intellectual property law. Perhaps the best example of this is the rapid growth in popularity of the open-source movement, in which software designs, and occasionally hardware, too, are shared widely and often for free.

I’ll illustrate those points with some case studies and war stories from my time working as a lawyer and adviser in Silicon Valley.

Some caveats

Before diving into those, a couple of caveats.

One is that my comments regarding IP law today are focused primarily on the software sector, which is where I’ve spent most of my career (at Facebook, at Andreessen Horowitz, and even way back at AOL-Time Warner). In areas outside the software sector—for example, hardware or biotech—we generally see more support for patents and traditional IP rules. But as software becomes integrated into more and more products and more and more facets of life—in the phrasing of Marc Andreessen, founder of our firm (and a Wisconsin native), as “software is eating the world”—the perspective of the software community regarding intellectual property is likely to become increasingly influential.

The other caveat is that I’m humbled to be up here giving the Nies Lecture, for I don’t consider myself an expert in intellectual property law. I didn’t even take an IP law class in law school, and before my going to Facebook, my practice was predominantly in administrative law, antitrust and litigation more generally, and corporate governance. So to be clear—in case of any conflict between what I say today and what Professors Boyden and Murray are teaching you—I strongly advise you to go with what they say.

But I do hope to offer today the perspective of someone who has spent extensive time over the past several years dealing with IP law as it’s being practiced “on the front lines,” in an innovative and rapidly evolving sector where legal doctrines and prevailing theories—and, especially, perceptions of market participants—can change dramatically in a matter of years.

Forget the framed patents on the wall

Twenty years ago, and maybe even as recently as 5 to 10 years ago, if you walked into the office of a successful computer programmer at a prominent tech company, you most likely would have seen, proudly displayed on her office wall, framed patent certificates from the U.S. Patent and Trademark Office (PTO)—with the nice gold seal and the red ribbon—attesting to patents that the programmer had secured.

Today, that picture is entirely different.

To begin with, in today’s Silicon Valley, there are few if any offices to walk into. Silicon Valley has embraced

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the “open desk environment,” first popularized by Facebook, where not even Mark Zuckerberg has an office. They don’t even have cubicles. Instead, employees work out in the open.

But even were there some wall space, most computer engineers today would not think of hanging a patent certificate on the wall. In contrast to the prevailing view only a short few years ago, patents today are viewed with disdain by many programmers.

The attitude of modern software engineers is captured well in this post from the blog of Mozilla Corporation. (Mozilla produces the Firefox web browser and is a “free software community.”) In an April 2015 blog post, Mozilla’s general counsel wrote:

The threat posed by the growing pervasiveness of . . . overbroad and vague software patents is the shroud of [fear, uncertainty, and doubt] they cast over emerging and innovative technologies. It can feel impossible to know whether you are infringing someone else’s software patent, which can slow or frustrate innovation. . . . It is sadly ironic that much of the increasing costs of software patent issues are being borne by innovators themselves[—]the very individuals the patent system was supposed to incentivize.

Congress has also gotten in on the act, with various patent law-reform efforts. In 2011, by heavy bipartisan majorities, Congress passed (and President Obama signed into law) the America Invents Act. Its promoters stated its purposes as “[to] improve patent quality” and “weed out patents that never should have issued in the first place.”

The America Invents Act represented the first major overhaul of the patent system in about 60 years. But calls for patent system reform have continued. For the past couple of years, Congress has been considering

another patent-reform bill, H.R. 9, titled the Innovation Act. House Judiciary Chairman Bob Goodlatte, the primary sponsor, introduced the bill in 2013, saying, “Abusive patent litigation is a drag on our economy.” The perception of many in Congress remains that the patent laws are being abused in a way that hampers innovation.

Certainly that is the prevailing view in Silicon Valley. In my time, there was perhaps no better illustration of this than when Yahoo sued our company (Facebook) for alleged patent infringement in early 2012—and how that played out.

In February 2012, Facebook’s long-awaited initial public offering was imminent. We had just filed our Form S-1 with the SEC, thereby publicly indicating our intent to go public, which we ended up doing in May of that year.

But in late February, Yahoo made its move. After an email from Yahoo and the arrangement of a phone call, my colleagues and I had a pretty good sense of what was going on. The call happened on Monday, February 27, 2012: In it, Yahoo told us that Facebook infringed on many of Yahoo’s patents but that, for an acceptable payment, it would give Facebook a license.

This was the pre-IPO shakedown. Indeed, about 20 minutes after our call ended, we got a call from the *New York Times*, asking us for comment on a report—from unspecified “people briefed on the matter”—that Yahoo was threatening a patent lawsuit against Facebook.

This wasn’t Yahoo’s first rodeo. Eight years earlier, in 2004, Yahoo had pursued a patent lawsuit against Google (a lawsuit Yahoo had picked up in an acquisition) on the eve of the search giant’s IPO. Google ended up settling the lawsuit in August 2004, just weeks before going public, giving Yahoo 2.7 million shares of its stock, worth at least \$290 million at the time and potentially much more. ▶▶



This prior history is why we saw Yahoo's gambit coming. It worked in 2004 against Google, so in 2012 Yahoo figured why not again go after a high-profile internet company on the eve of its IPO, its moment of greatest vulnerability, to coerce a hefty settlement payment.

Not an unreasonable theory. But Yahoo had failed to comprehend that the patent landscape had changed enormously in the intervening eight years since its patent assault on Google. Specifically, Yahoo failed to appreciate just how wildly unpopular a patent lawsuit against Facebook would be.

Yahoo instantly became a pariah in Silicon Valley.

In its complaint, Yahoo claimed that the core features of Facebook were invented by Yahoo: "For much of the technology upon which Facebook is based, Yahoo got there first and was therefore granted patents by the United States Patent Office to protect those innovations," the Yahoo filing said. The lawsuit claimed that "Facebook's entire social network model" was based on patented Yahoo technology.

Silicon Valley turns against Yahoo

In another era, those Yahoo claims might have garnered some respect among engineers and inspired fear at Facebook. But not so in 2012. The Silicon Valley engineering community erupted with anger at Yahoo. That anger included some colorful examples.

Let me cite, first, David Sacks, a respected Silicon Valley leader (and University of Chicago law school grad). Sacks was the former COO of PayPal and now was founder and CEO of a company called Yammer (later sold to Microsoft). Sacks used Twitter to vent his outrage at Yahoo. He tweeted: "I'm declaring it: Yammer will never hire another former Yahoo employee who

doesn't leave in the next 60 days. Who will join me? #stopYahoo."

Sacks also offered a carrot: "I'm pleased to announce a \$25,000 signing bonus for any Yahoo employee who joins Yammer in the next 60 days."

A few days later, again from Sacks: "Yahoo employees: why are you still there? You work for a patent troll. Quit now to send a message and preserve your dignity."

Sacks explained the basis of his anger: "Every software patent is a law prohibiting the writing of code in a given area. USPTO is prohibiting software creation at alarming rate. Software code is already protected by copyright law. The results of that code should not be patentable."

Fred Wilson, a highly influential venture capitalist and technology leader with Union Square Ventures (based in New York City, but still very much in tune with the Silicon Valley zeitgeist), wrote, "Yahoo! has broken ranks and crossed the unspoken line, which is that web companies don't sue each other over their bogus patent portfolios. I don't think there's a unique idea out there in the web space and hasn't been for well over a decade. Pretty much everything useful is based on prior art going back before the commercial web existed. . . .

"I am writing this in outrage at Yahoo! I used to care about that company for some reason. No more. They are dead to me. Dead and gone. I hate them now."

Plenty of others—including even Mark Cuban, the outspoken entrepreneur and owner of the Dallas Mavericks—chimed in loudly on Facebook's side.

Perhaps most damagingly to Yahoo, one of the company's former programmers, Andy Baio, blasted the company, in an article titled, "A Patent Lie: How Yahoo Weaponized My Work." It perfectly captured the 2012 Silicon Valley attitude toward patents—and the outrage at Yahoo.



Baio wrote: “I’m no fan of Facebook, but this [lawsuit by Yahoo] is a deplorable move. It’s nothing less than extortion, expertly timed during the SEC-mandated quiet period before Facebook’s IPO. It’s an attack on invention and the hacker ethic.”

He recalled that during his time at the company, “Yahoo assured us that their patent portfolio was a precautionary measure, to defend against patent trolls and others who might try to attack Yahoo with their own holdings. . . . I thought I was giving them a shield, but turns out I gave them a missile with my name permanently engraved on it. Yahoo’s lawsuit against Facebook is an insult to the talented engineers who filed patents with the understanding they wouldn’t be used for evil. Betraying that trust won’t be forgotten, but I doubt it matters anymore. Nobody I know wants to work for a company like that.”

Inside Facebook, let’s just say, we were quite pleased to see this furious negative reaction to Yahoo’s lawsuit. But we were not surprised. Perhaps because we were such a young company, or because we were still led by our young computer-engineer founder, Mark Zuckerberg, we understood the modern engineer’s view of patents. And we therefore believed—from the moment that we received the opening phone call from Yahoo—that public opinion (and specifically, the highly influential engineer opinion) would be on our side in this battle.

After being served with Yahoo’s complaint, we were faced with the question of how to respond. Anticipating just this type of pre-IPO shakedown scenario, we had—under the wise guidance of our outstanding head IP lawyer, deputy general counsel Sam O’Rourke—amassed our own stable of patents over the years, both homegrown patents and ones we’d quietly acquired. And we knew that by counterclaiming against Yahoo with some of those patents, we would create risk, uncertainty, and cost for Yahoo, and at minimum raise our negotiating leverage.

But consider also this: Yahoo had infuriated the entire Silicon Valley region by suing us for patent infringement. And that universal scorn was invaluable to us. If Facebook punched back at Yahoo with our own patent counterclaims (as traditional litigation tactics dictated), would the valley similarly turn on us? Would we lose all that goodwill? Would engineers say, “We used to be on Facebook’s side when you were the victim, but now you’re coming forward with your own software patents, so you’re just as bad as Yahoo. A pox on both your houses!” Maybe even *Facebook* engineers would have that reaction.

To lawyers, this probably seems like an easy call: Of course, file the counterclaims. Everyone will understand that you’re just defending yourself. But it was not that simple, so this was a strategic and tactical question we really wrestled with.

Facebook responds “more in sorrow”

In the end, we decided to file the patent counterclaims against Yahoo. But we did so in a way that was measured and calculated to send a message.

First, while we had many patents at our disposal in our portfolio, we asserted only 10 patents against Yahoo. Why 10? Because Yahoo had asserted 10 against us in its original complaint. That sent the message that we were simply responding in kind, not escalating.

Second, because the public perception of our patent counterclaims (among a lay audience, and one hostile to patents) would be so all-important, we knew that we had to explain and frame our actions. So when we made our filing, we also issued a statement from me as the general counsel of the company (rather than from a corporate spokesman, as is customary). We knew the statement would be as important as, if not more important than, the complaint itself.

The statement from me was as follows: “From the outset, we said we would defend ourselves vigorously against Yahoo’s lawsuit, and today we filed our answer as well as counterclaims against Yahoo for infringing 10 of Facebook’s patents. While we are asserting patent claims of our own, we do so in response to Yahoo’s shortsighted decision to attack one of its partners and prioritize litigation over innovation.”

The tone was “more in sorrow than in anger.” Almost apologetic.

Soon the reactions started rolling in. Our message had been received and understood by the community. The tech leaders were still on our side, notwithstanding their hatred for software patents.

The influential venture capitalist and technologist, Chris Dixon, who is now one of my partners at ▶▶

But Yahoo had failed to comprehend that the patent landscape had changed enormously in the intervening eight years since its patent assault on Google.



Andressen Horowitz (but someone I did not know at the time), wrote:

Like many in tech, I believe all software patents should be abolished. That said, I think Facebook made the right move by filing a lawsuit against Yahoo's patent attack. As I see it, Facebook had 4 choices:

- Settle;
- Defend without countersuing;
- Countersue without signaling any aversion to patent lawsuits; or
- Countersue and signal that they are averse to patent lawsuits, which in turn signals that they will drop the lawsuit if Yahoo does. This seems to be what Facebook has done.

Chris Dixon is a smart man! He went on: "Countersuing gives Facebook the best chance of fending off Yahoo's lawsuit—and therefore not rewarding patent lawsuits. And signaling they are only doing so in response to Yahoo (hence might drop the suit if Yahoo does) keeps them on the right side of innovation."

Surveying all of this positive reaction to our counterclaims, TechCrunch, which is one of the leading tech-news websites, wrote: "Facebook has executed a masterful response to Yahoo's patent trolling that protects it legally but still makes it look like the victim." To a roomful of Facebook lawyers, that had a nice ring to it.

That was a pivotal moment in the case—we managed to defend ourselves vigorously, while retaining all the pro-Facebook goodwill and anti-Yahoo sentiment that had come out after Yahoo's lawsuit. Once we had achieved that, it was only a matter of time until the case resolved favorably for us.

I won't go through all the colorful details of how the case played out. That could take months. Suffice it to say that Facebook's IPO went forward, and the Yahoo patent case ended with a quiet settlement in July 2012:

- no payment whatsoever by Facebook to Yahoo
- full cross-license to each other's patent portfolios
- Facebook as something of a Silicon Valley hero, for having stood up against software patent abuse and defending innovation
- And Facebook bought a stable of early internet patents from AOL and Microsoft. Not from Yahoo.

Shortly after the case was settled, the news website *Business Insider* put a capstone on the whole episode. The article's headline: "Just So We're Clear: Facebook Totally Demolished Yahoo in the Patent Fight That Just Ended." And a flavor from the article itself: "Facebook did what it always does in legal battles: it dug a trench, filled it with lawyers, and prepared for war. Since the company was founded, Facebook lawyers have always been exceptionally aggressive. They bring nukes to a knife fight."

I imagine that article is still being used in Facebook legal department recruiting!

But seriously, as much as we would like to claim that this victory was due to good lawyering on the Facebook side (in addition to our excellent in-house team, we used Cooley LLP and WilmerHale), substantial credit must go to the sea change in Silicon Valley attitudes toward patents, which Yahoo had failed to appreciate.

Moving on now from patents, let's consider copyright and trademark.

As the congressional efforts around patent reform suggest, the perception that the patent system is being abused is reasonably well understood. Perhaps less appreciated is the Silicon Valley perspective that copyright and trademark likewise are often barriers to innovation.



Silicon Valley's case against copyright

Recall that David Sacks, Yammer CEO, in blasting software patents, observed, "Software code is already protected by copyright law. The results of that code should not be patentable." So you might think that Silicon Valley software engineers would be pro-copyright.

In fact, not so much.

The case against copyright, from a Silicon Valley perspective, is that traditional media companies are too aggressive in enforcing their copyrights. In this view, copyright is an antiquated tool used by media giants (music and film, mainly) to hinder innovation and competition in the internet arena.

The case study that best illustrated this to me was the SOPA/PIPA episode of late 2011 and early 2012—an episode that still resonates strongly in Silicon Valley, Hollywood, and Washington.

Here's the background: Hollywood convinced Washington that new rules were needed to combat copyright infringement (a/k/a piracy) on the web. Congress proposed legislation: the Stop Online Piracy Act (SOPA) and the Protect IP Act (PIPA). These got considerable traction and were close to being passed, when web companies and technologists rebelled. Even MC Hammer (yes, the early-'90s rapper) got into the fray, on the side of web companies.

The anti-SOPA and PIPA argument was that under the guise of combating web piracy (copyright infringement), the big media companies and their allies in Congress were unduly constraining fair-use doctrine, engaging in "censorship" of expression on the web, and hindering innovation and competition.

The activist group MoveOn, which engaged on the anti-SOPA and PIPA side, argued: "Congress is playing

fast and loose with Internet censorship legislation that would have people like Justin Bieber thrown in jail for uploading a video to YouTube." (Let us leave aside that some might not mind seeing Bieber suffer that fate.) "The Internet censorship legislation could severely restrict free speech, and put a stranglehold on one of the most innovative, job-creating industries of our time."

Other users were drawn into the fight. Wikipedia and Reddit, among other sites, shut down for a day to protest the proposed legislation.

Google ran a black banner.

Faced with this intense opposition, Congress blinked. SOPA and PIPA were shelved in early 2012. This would have been inconceivable a few years earlier. Hollywood's powerful lobbyists would have pushed this through. But now, in 2012, the argument that overaggressive copyright enforcement might

constrain web innovation

was unexpectedly powerful. It carried the day.

And finally, some thoughts on trademark.

Even friendly old trademark is subject to its share of criticism in Silicon Valley. This was truly surprising to me.

Traditional doctrine requires aggressive vigilance against trademark infringement—as one hornbook says, "It is crucial for a trademark owner to be vigilant in monitoring the use of its mark as well as the public perception of its mark." That seems uncontroversial. ▶▶

. . . now, in 2012, the argument that over-aggressive copyright enforcement might constrain web innovation was unexpectedly powerful. It carried the day.

We had to adapt and balance classic legal doctrine with the realities of contemporary Silicon Valley attitudes and perceptions.

The case study here is our own trademark-monitoring and enforcement efforts at Facebook. So, Facebook is not always the “good guy” in these stories.

We started off taking a traditional, aggressive posture on trademark enforcement. Not only would we (of course) take action against anyone using the “Facebook” mark in an online social networking context, but, in addition, we challenged many sites that used the prefix Face- or the suffix -book in their names. Teachbook, Dogbook (and other pet-book names).

When Facebook was still a fledgling startup company, say until 2009–2010, this traditional approach made sense. But over time, as Facebook became more established and more powerful, our trademark enforcement efforts—which to a lawyer seemed routine—became controversial to some in Silicon Valley. The sense was that the powerful Facebook was unnecessarily making life difficult for some innovative websites.

Sure, those sites may have been infringing as a matter of customary trademark law. But, come on, man—is Facebook really threatened by a nascent social network site that wants to use book or Face in the name? Who, seriously, is going to be confused? Shouldn’t we be flattered by the use of our name? Wasn’t this a sign the company had arrived?

And if we’re aggressive in going after these sites, aren’t we frustrating the dreams of some young innovators? Some of our own employees had these questions, and you can’t just ignore the questions and cite trademark hornbook law.

Suffice to say that our trademark enforcement standards modified as we went along through the years. We had to adapt and balance classic legal doctrine with the realities of contemporary Silicon Valley attitudes and perceptions.

The case for “open computing”

I want also to discuss a second notable IP law trend in Silicon Valley circa 2016. In addition to the widespread view that IP laws are too often abused to hamper innovation, there’s an emerging sense that the

fundamental free-market premise of traditional IP law may be out of date and out of touch. That is, there’s a growing sense among some engineers that innovation is best promoted, not by the promise of exclusive rights and reaping the profits of one’s invention, but rather via sharing (including free sharing) and collaboration.

This is the open-source movement, and a prime case study is Facebook’s Open Compute Project.

The Open Compute Project relates to the design of data centers and servers. Servers are essentially computers, dedicated to storing data and serving it up quickly on demand when it’s needed. A data center essentially is a huge building containing hundreds or thousands of servers, connected together and working together to store data and process data requests. In short, data centers (and the servers in those centers) are the “back end” that the user never sees but what makes a site such as Facebook run. And for a consumer internet company like Facebook—which stores and serves up data for 1.3 billion monthly active users worldwide—the cost of buying servers and building and running data centers is its number-one expense.

Whenever Facebook releases quarterly earnings, its expenses number is probably the item most closely watched by Wall Street analysts. And this is true not just for Facebook but also for virtually every web company.

So, presumably, if your in-house programmers and data scientists could design servers and data centers that operated much more efficiently than the industry standard, that would be an important competitive advantage in the highly competitive internet sector. It would be an advantage you would want to keep to yourself and exploit to help build market share, improve earnings, and keep competitors in the rearview mirror.

That would be traditional business thinking. And traditional IP law follows that exclusive-rights paradigm of incentives. But that’s not what happened at Facebook, with Open Compute.

Here’s the story of the Open Compute Project, from the project’s website:

In 2009, Facebook was growing exponentially, offering new services and giving millions of people a platform to share photos and videos. Looking ahead, the company realized that it had to rethink its infrastructure to accommodate the huge influx of new people and data, and also control costs and energy consumption.

That’s when Facebook started a project to design the world’s most energy efficient data

center, one that could handle unprecedented scale at the lowest possible cost. A small team of engineers spent the next two years designing and building one from the ground up: software, servers, racks, power supplies, and cooling. It was 38% more energy efficient to build and 24% less expensive to run than the company's previous facilities—and has led to even greater innovation.

Those are enormous savings, and in traditional business thinking, you'd patent those and take them to the bank. But instead of using these innovative designs for competitive advantage, Facebook shared them publicly . . . for free.

Again, from the Open Compute website: "The [Project] hoped to create a movement in the hardware space that would bring about the same kind of creativity and collaboration we see in open-source software. And that's exactly what's happening."

Why in the world would Facebook do this? This was 2011. Facebook was still a private company, more than a year away from going public. There were still plenty of skeptics who predicted the company would never be successful. Presumably Facebook needed every advantage it could get, especially homegrown, internally developed cost advantages.

Why give the technology away? To a traditional business mind, or a traditional IP lawyer, this seems totally nuts.

But it's really a mindset difference, and one that defines the open-source movement: From the Open Compute website: "We believe that openly sharing ideas, specifications, and other intellectual property is the key to maximizing innovation and reducing complexity in tech components." This perspective—that innovation is best achieved through "openly sharing ideas"—is gaining traction in Silicon Valley.

One other quick, but prominent, example of the open-source, open-sharing movement is one that many of you in the audience may use and have on you right now: an Android phone. Whereas Apple, creator of the iPhone, is famously secretive about its designs, Google—the developer of Android—has taken the opposite tack in the smart phone wars.

Google bought Android in 2005 and released the Android OS in 2007. But, rather than keeping it proprietary and developing Google phones, Google instead open-sources Android, giving it away for free. The strategy here is to get Google's operating system installed on as many phones as possible worldwide.

And, indeed, although some may think of the iPhone as the market leader, Android phones are actually the smartphone market-share leader virtually everywhere other than Japan and Australia, often by wide margins.

In the United States, Android phones have 59 percent market share versus 39 percent for Apple iOS. In China, it's 71 percent Android to 28 percent Apple. In Spain, it's 86 percent to 12 percent.

In Google's case, this is an understandable business strategy, as it hopes to monetize the installed Android base by having all those Android users worldwide using Google (or now, "Alphabet") products and viewing paid advertisements on Google.

But in addition, the sense among many technologists I speak with is that Android phones are superior to iPhones, precisely because the operating system is open-sourced and therefore getting the benefit of collaboration among computer scientists and users around the globe.

Here is my last point on the rise of open-source thinking: When you view this in combination with the antipathy toward patents, this makes it quite challenging and interesting for in-house lawyers at tech companies. For almost every company—even if the company strongly embraces open source—it's still important to develop a stable of patents, at minimum to deter and respond to attacks like Yahoo's lawsuit. But today's engineers tend to run away from in-house patent lawyers and instead want to open-source almost everything. So it takes special skills—not just legal skills, but probably more to the point, people skills and EQ—for an in-house IP lawyer to build the goodwill and relationships with computer programmers so that they will even come forward with potentially patentable inventions.

At Facebook, I think we did a good job on this—credit not to me but to my colleague Sam O'Rourke and the team he built in the IP department. But it takes a lot of time and effort to get this balance right.

* * * *

Thank you for enduring such a lengthy discussion of IP law. I hope this conveyed a sense of the interesting challenges faced by in-house IP lawyers in Silicon Valley today, as they try to square traditional IP law principles and rules with rapidly moving trends in a highly innovative sector of the economy. ■