Imitation is the Sincerest Form of Flattery: Software and User Interface Design in a Changing Patent Landscape

Megan Cardaman, The Ohio State University
INTRODUCTION

Have you seen the latest trending YouTube video¹? It’s of a two-year-old using an iPad perfectly. Scrolling through the screens, pinching to zoom, tugging to refresh, choosing icons, and fast forwarding. All of these gestural interactions with the mobile interface are patented, and as recent lawsuits between Apple and Samsung, as well as many other technology companies, have shown, these gestures are valuable.

Patents are good for protecting valuable ideas, but the abstract nature of new technology such as software and much of the innovation in smart phones, is causing problems. It is causing problems for patent examiners, problems for the patent system, problems for start-ups who cannot get around huge monopolies created by companies like Apple with deep pockets to litigate, and problems for innovation.

¹Undergraduate fourth-year majoring in Strategic Communication at The Ohio State University.
²http://www.youtube.com/watch?v=MGMsT4qNA-c
The United States patent system, created in 1790, needs to be reworked, because as this paper will explore the gestural aspects of software technology are like a new language, and for that language to become useful as a communication tool, the gestures and language must reach a critical mass to become viable. Software patents need not be granted when they give huge corporations a monopoly on broad technologies that would be better used by the public as a whole, in order to create a better means of communication. Innovation will continue to stagnate due to litigious patent holders and fuzzy boundaries of patent overlap, until the guidelines surrounding software patents can be redrafted.

I. HISTORY OF PATENTS AND DESIGN

The first patent was granted in 1790 to Samuel Hopkins for the process of making pot ash, an ingredient used in soap making and glass manufacturing, shortly after the Patent Act was created. Since its inception the United States Patent and Trademark Office (USPTO) has granted more than 8 million patents. As the rate of technological invention and innovation has accelerated, the USPTO has had to deal with changing how to interpret patents. In recent years the realm of patents has shifted, moving from more mechanical objects to applications for patenting software. The Patent Act does not explicitly prevent the patenting of algorithms, and the USPTO has taken direction from the Supreme Court decisions that computer software is patentable but has not held to the limitations that these decisions impose.

A. A Changing Landscape: Software vs. Mechanical Innovations

This shift has been riddled with controversy, problems, and debate about the fuzzy boundaries of the patents. Patents have always been sticky due to the imprecise, vast language that is frequently used in patents. Even mechanical device patents can have imprecise language, but the difference between that and software is that with a mechanical device there is a tangible

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2 Infra note 3
3 The Patent Act was created under the provision of the U.S. Constitution that gave Congress the right “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.” See U.S. CONST. art. 1, § 8, cl. 8
5 The patent office, while an essential piece of our nation’s history, is not always viewed in such positive light. James Gleick takes a distinct viewpoint on the patent office as part of a Faustian bargain, where inventors give up their secrets, publishing them for all to see, in exchange for a 20-year government guarantee on a monopoly of their technology. See James Gleick, Patently Absurd, http://www.around.com/patent.html
6 United States Patent and Trademark Office, uspto.gov
7 This acceleration occurred in the late 1970s and 1980s and has exponentially grown since then. See Paul Sherman, Your Design is Infringing on My Patent: The Case Against User Interface and Interaction Model Patents and Intellectual Property. July 10, 2007
object to look at to gauge the true meaning of the language in a patent. A literal, tangible object accompanied a description of the patent until this practice of submitting a model was disbanded in 1880.

In contrast, software and the technological innovations that have emerged so rapidly in the past 20 years are not as tangible, and therefore many argue that the patent rules that have been in standing since the USPTO was formed are not keeping up. As the value of an invention shifts from industrial design to interaction design (such as is used on the seemingly smaller and smaller screens of our technology), how do we shift the boundaries to accommodate this?

B. Problems with Patents

There are multiple problems. First of all, the sheer number of applications for patents is overwhelming. Secondly, the boundaries of what patents grant ownership of is an issue.

The number of patent applications has risen by 50 percent over the last decade, with more than 540,000 patent applications filed in 2011 alone. Since 2000, Apple has won 4,100 patents, Microsoft 21,000, and Google 2,700. In the last twenty years, software patents have increased from only one-fourth of all USPTO-issued patents to the overwhelming majority of issued patents.

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9 The U.S. Patent Office used to require a working model to be submitted with mechanical patent applications. The patent office would compare the working models and if the device worked in a different manner, the device did not infringe on the patent. See James Bessen, The Patent Troll Crisis is Really a Software Patent Crisis, THE WASHINGTON POST, (September 3, 2013). http://www.washingtonpost.com/blogs/the-switch/wp/2013/09/03/the-patent-troll-crisis-is-really-a-software-patent-crisis.
11 Software is defined as “having functionality that distinguishes it from ordinary writings and with the aid of a computer has the power to physically implement intellectual concepts.” See John Swinson, Copyright or Patent or Both: An Algorithmic approach to Computer Software Protection, in the HARVARD JOURNAL OF LAW AND TECHNOLOGY, Vol. 5, 1991, at 154.
12 Contrarily I found an interesting article that discussed the idea of “patent thickets,” where a dense grouping of branches (or in this case patents) chokes up technology and technological innovation. The author pointed out that while many are yelling, “The sky is falling” over the use of patents in software, the same kind of patent thickets occurred not so long ago with the sewing machine. Although it is hard to take the mind set where a sewing machine is revolutionarily equivalent to a smart phone, in the 19th century it was just that. Therefore I must note that while it seems, in the midst of this “smart phone patent thicket,” that technological innovation is ceasing due to lawsuits and licensing, it may just be an indication that a complex and marketable product is emerging. See Jeffrey Lewis & Ryan Mott, The Sky is Not Falling: Navigating the Smartphone Patent Thicket, WORLD INTELLECTUAL PROPERTY ORGANIZATION MAGAZINE, February 2013, http://www.wipo.int/wipo_magazine/en/2013/01/article_0002.html
15 Id.
And it’s not just the sheer number. As compared to other inventions, software patents are two times more likely to be litigated and patents on methods of doing business, which are usually software-related, are seven times more likely to be litigated. According to a Stanford study, in the last two years, $20 billion was spent on patent litigation and patent purchasing in the smart phone industry alone.

Software patents often grant ownership of concepts rather than mechanical creations and the conceptual description itself is enough to obtain a patent, so the boundaries become even more undefined and overlap occurs. When these boundaries overlap, patent examiners have difficulty determining the novelty of a patent. Novelty is just one aspect that an invention must have to be granted a patent. In addition, an invention must be not obvious and useful. There are a plethora of problems stemming from patenting software (and protecting those patents as we will see in future sections).

C. Algorithms and Expressions

Looking at the root of why software is difficult to wrap our “patent brains” around we see it stems from the algorithms and the extent of the protection of patents. Patent law does not protect abstract ideas, and there is much debate on the distinction between “the idea” and “the expression” of that idea. Many people have argued that because software is simply a set of commands in computer language, it should not be patentable; more have argued that while the functionality of the application should not be patentable, the actual algorithms that underlie the

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18 An amount equivalent to eight Mars rover missions or the cost of building a fleet of 3,000 Titanic ships. See Charles Duhigg & Steve Lohr, supra note 13.


20 Swinson, supra note 10, at 154

21 Id.

22 And that’s actually not that strict of a standard. Recently a patent was granted for measuring bra size by using a tape measure (US 6467180 B1). Not sure that is the definition of novelty (which reads, according to Merriam-Webster, “the state of being new, different, and unusual.”)

23 I thoroughly enjoyed the description given by the authors about how to meet these three criteria: “To receive a patent, an invention must be novel (substantially different from what exists), not obvious (one can’t patent a new toaster simply by expanding it to handle five slices of bread), and useful (someone can’t patent an invisibility machine if invisibility is impossible).” See Charles Duhigg & Steve Lohr, The Patent, Used as a Sword, NY TIMES, Oct. 7, 2012, at 13. http://www.nytimes.com/2012/10/08/technology/patent-wars-among-tech-giants-can-stifle-competition.html?pagewanted=2.

24 Swinson, supra note 10, at 156

functionality are. In the early 1980s, the courts saw software as just a collection of mathematical algorithms or as the NY Times article put it “tiny revelations of nature’s secrets – not as an invention and thus not patentable.” What makes a computer program valuable is its form of expression. Machines can understand and perform such algorithms, and human language cannot be used to tell machines what to do yet; therefore, the expression of the computer program is what is of value to humans. The patent system in place is not intended to protect expression, yet that is the most valuable thing about a computer program.

User interface design, defined as the design of the system or interface with which a user has direct contact and with which they interact to conduct activities, is complicated, intricate and dense for the layman, and when patent examiners are spending only roughly 17 hours per patent application, its no wonder there is overlap and confusion in software patent law. Patent examiners do not typically question the underlying features of patent applications for business models or computer software, and thus do not clarify how the patent will function.

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26 Sherman, supra note 6
27 This statement about algorithms is supported by Swinson in the Harvard Journal of Law and Technology, “It goes without saying that a patent for a process that uses a law of nature, such as the process of bottling milk using gravity, does not give the patent holder a patent on the law of gravity.” See Swinson, supra Section I, note 6, at note 27.
28 I see the software as the “interpreter,” much like for a foreign language, converting information so that someone else (or something else…a computer) can understand the function. Sherman, supra note 6, at 154
29 Expanding upon the given definition due to the importance of user interface design in smart phone technology and litigations, I found this three-pronged explanation of user interface design given by the Interaction Design Association’s guidelines: 1) Interaction design defines the structure and behaviors of interactive products and services, and user interactions with those products and services. 2) Good interaction design effectively communicates a system’s interactivity and functionality, defines behaviors that communicate a system’s responses to user interactions, reveals both simple and complex workflows, informs users about system state changes, and prevents user error. 3) Interaction design is grounded in an understanding of real users (goals, tasks, experiences, needs, and wants) and balances these needs with business goals and technological capabilities. See Luke Wrobesky, Defining Interaction Design (IxDA Guidelines), April 14, 2008. http://www.lukew.com/ff/entry.asp?
30 See Groth, supra note 12
31 I figured there must be some jokes out there about patent examiners…I was right. “A guy goes to the Patent Office to apply for a job as a patent examiner: The interviewer asks him, 'Are you allergic to anything?' He says 'Yes - just caffeine.' 'Have you ever been in the service?' 'Yes,' he says. 'I was in Iraq for two years.' The interviewer says, 'That will give you 5 extra points toward employment,' and then asks, 'Are you disabled in any way?' The guy says, 'Yes 100%...an IED exploded near me and blew my testicles off.' The interviewer tells the guy, 'O.K. In that case, I can hire you right now. Normal hours are from 8 a.m. to 4 p.m.. You can start tomorrow at 10 a.m. - and plan on starting at 10 a.m. every day.' The guy is puzzled and says, 'If the hours are from 8 a.m. to 4 a.m., why don't you want me to be here before 10 a.m.?' 'This is a government job,' the interviewer says. 'For the first two hours we just stand around drinking coffee and scratching our balls. No point in you coming in for that.'
II. Gestures, Communication, and Similarity

Communication is everywhere[^32], and what makes language, semantics, and gestures useful is that they have reached a critical mass, becoming a viable tool for communication.[^33] In the landscape of our technology[^34], gestures continue to become ever more important, in touch screens for phones, iPads, computers, and so many other inventions. In her thesis on gesture mapping for interaction design[^35], Kuhlman discusses the origins of language and its role in today’s use of symbolic gestures:

“In the early days of communication, shared humans transitioned toward symbolic thought processes because they began to communicate through pantomime. Pantomime required an integration of sensory experiences that eventually allowed humans to evolve into the use of symbolic systems of representation.”

She points out the interesting fact that we all have our own style of gestures, similar to the differences in handwriting styles, and that these gestures (like handwriting) have a typified form. Kuhlman decisively states, “As with any language, conformity to a type form allows more articulate expression because there is a standard of communication in which to express one’s self to others in a common language.”[^36]

The relationship between gestures, software, and patent law is a conundrum, as illustrated by some of the recent patents granted to Apple. Patent number 7,479,949[^37] described in the application as “touch screen device, method, and graphical user interface for determining commands by applying heuristics” gives Apple the patent for multi-touch interfaces[^38]. Having this patent upheld limits the use of “gesture-based interaction schemas” by other companies.

[^32]: In one of my communication classes, the professor gave us the acronym WOVEN to describe all of the types of communication: written, oral, visual, electronic, and non-verbal.
[^33]: I can’t help but think of a child who has made up its own language, babbling to itself. While this is language, it is not what I consider communication because others do not understand it. There is no true exchange of information through this interaction. In user interface design and the gestures further discussed I will make a point that the narrowing of the communication tools we use helps to facilitate communication in the masses.
[^34]: Part of our changing technology landscape is videophilia, a condition of the new human tendency to focus on sedentary activities involving electronic media. *Infra* note 29. As I sit at my computer for about the sixth hour writing this paper, I do not think I have videophilia, because all I want to do is go outside.
[^36]: Basically what I was trying to describe at note 32. Kuhlman did it much more eloquently.
[^38]: As explained for those not on the level of Steve Jobs in computer literacy, this patent relates to scrolling, like on smart phones, and how the mode of scrolling can switch from horizontal to vertical to diagonal while locking in on a specific direction. See EnGadget for a video demonstration of what the patent protects http://www.engadget.com/2013/10/17/apple-patent-multitouch-uspto/
Although this is the way patents work, granting innovators ensured rights, the communication and usability aspect of these restrictions is considerable. If other companies must work around this patent and create other ways of scrolling, the dissemination of this gesture is limited, or at least not as widespread. This communication tool will not be as useful or viable because it will not reach critical mass.

In addition to affecting the communication aspect, patents also affect the usability. One author notes that copying others’ designs allows us to avoid “usability hell.” This hell, of having a “fragmented set of gestures that require different interactions to trigger the same action” can be described in layman’s terms as using the “pull-to-refresh” downward motion gesture on Twitter, but having to learn other unique interactions (edge gestures, multi-finger taps, swiping) to refresh feeds on Snapchat or Instagram. The benefit of “imitation as the sincerest form of flattery” is that the overall user experience improves across apps and platforms. Look no further than your next drive home from work. Had an automobile manufacturer patented the user interface elements of a car, the consequence would be that no other manufacturers could put steering wheel, gas pedal, clutch, and shifter in the same configuration. How would your car look and function, and how would that translate in driving others’ cars, other brands, or other types of vehicles?

Taking the perspective of the other side, the companies and their designers may argue that patents are essential to prevent copy and imitation. According to a former Apple executive, “What it does is provide something for other companies to work around. The patent is out there. It’s wide open. The whole world looks at it and thinks ‘How do I get around it?’ That inspires creativity and more development.” However, this does not make sense. One author gave the example of General Motors patenting the method that allows drivers to insert the key to start the ignition. Why should other inventors and engineers have to intentionally design around this method, creating a bulkier, more complicated interaction just to avoid the patent? Wouldn’t it make more sense to work within the patent design, which is efficient and streamlined, than having to create a roundabout way of the getting to the same goal just because of the possibility of patent litigation?

III. Patents in War

39 This is a very specific example of a very specific, small gesture, but imagine if Apple and other companies went after every piece of software they created. It slows the dissemination of technology to the critical masses. Another more far-reaching, tangible example is VisiCalc, created in 1979 by Dan Bricklin. He did not obtain a patent for this computer program, allowing Microsoft to bring out Excel in 1999. See Randall Stross, Why Bill Gates Wants 3,000 Patents, NY TIMES, July 31 2005. http://www.nytimes.com/2005/07/31/business/yourmoney/31digi.html?ei=5090&en=b674d209b5106a1b&ex=1280462400&partner=techdirt&emc=rss&pagewanted=all&_r=0


41 Sherman, supra note 6

42 Id.
A. Patents as Shields

There is some sense of the “greater good” in interaction and interface design amongst software inventors, and it is apparent that some companies take advantage of this. For example, patent 8,448,084 granted Twitter the now common “pull to refresh” gesture. The gesture-based interaction is not used only on Twitter though. Facebook uses it and it is also used in Apple’s iOS6. How so? Twitter released an “Innovator’s Patent Agreement” in April 2012, which states:

“The IPA is a new way to do patent assignment that keeps control in the hands of engineers and designers. It is a commitment from Twitter to our employees that patents can only be used for defensive purposes. We will not use the patents from employees’ inventions in offensive litigation without their permission. What’s more, this control flows with the patents, so if we sold them to others, they could only use them as the inventor intended.”

This patent agreement strays pretty far from the typical company policy on engineer’s rights and patent guidelines. Most companies make engineers, designers, and employees sign their inventor’s rights over to the company, giving the company control and the power to do what they want with the patents (including selling them at their discretion). One story told about Apple is that engineers were asked to participate in monthly information disclosure sessions, where they explained, to lawyers, what they were working on. These projects included slight modifications to programs or streamlining processes, and as the lawyers sat in the meetings, they wrote down each idea so they could begin patenting them “for defensive purposes.” One engineer finally spoke up, voicing the concerns of many in the industry that he didn’t believe in patenting the rights to basic software concepts.

While Twitter and their new patent agreement focuses on using patents as a shield, many companies are using patents as swords. A destructive arms race of software patents on broad technologies has emerged from both patent trolls, looking solely for violators of patents (oftentimes hitting the small startups and innovators who have limited funds) and big technology companies, like Apple. The exploitation of these patent trolls and big companies on patent laws requires further discussion.

B. Patents as Swords: Apple vs. Samsung

43 Duhigg & Lohr, supra note 13
44 Id.
45 Twitter posts the Innovator’s Patent Agreement on their website for all to see and encourages others and other companies to #jointheflock and begin to change the patent landscape from one of offense to more of a defensive stance. See Twitter https://blog.twitter.com/2012/introducing-innovators-patent-agreement.
46 Law school faculty at the University of Berkeley California have also developed an idea known as the “Defensive Patent License,” where companies contribute their patents to a common pool that shields patent holders from “litigious aggressors.”
47 Duhigg & Lohr, supra note 43
48 Id.
One of the best cases to look at to see big technology companies and their patent problems is the high-profile, messy Apple vs. Samsung trial. Apple originally filed the suit against Samsung in April 2011 and in April 2012, the jury awarded Apple $1.05 million dollars. The United States District Court for the Northern District of California found that Samsung had copied and cloned the Apple-patented gestures, including the pinch-to-zoom, the bounce-back or rubber band effect, and the double tap zoom. Besides these gestural interactions, the jury found that design elements, such as rounded icon corners, the home button, and “rounded rectangle app icons arranged in a grid” were also infringing on Apple’s designs. Most recently, Judge Lucy Koh ordered a retrial to recalculate the damages of the case, and in November 2013, the retrial ended, ordering Samsung to pay Apple $290 million in damages. Apple basically has a monopoly many broad software technologies. Is this really good for innovation and communication?

CONCLUSION

While patents are good for protecting ideas, the current patent system needs to be reworked to reflect the changes in software and technology that has exponentially and rapidly emerged in the last few years. The gestures and communication at play in these devices and software programs, such as the multi-touch feature, are creating a new language and for that language to become useful as a communication tool, the gestures and language must reach a critical mass.

The overwhelming amount of offensive patent litigation in the software and cell phone technological realms creates stagnation in innovation and communication, due to the monopolies and barriers it creates. Companies like Apple and Samsung need to rethink their use of patents, using them to further technological innovation, instead of pursing lawsuits to try and keep one another from gaining the upper hand in the mobile market. Creating broad patents and offensively using them to attack other innovators suffocates innovation. The patent system and those who enforce the granted patents need to reexamine the laws and the system because of the changing landscape of software technology.

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49 The United States District Court in the Northern California District has a webpage solely dedicated to this case, due to the high level of media and public interest. http://cand.uscourts.gov/lhk/applevssamsung
50 Apple Inc. vs. Samsung Electronics Co. Ltd. et al C11-1846 C12-0630
52 Id.
53 Id.