IV. Patent War Today: Apple vs. Samsung

Apple's iPhone 3 disrupted the cell phone market in 2007. It brought a new touchscreen-driven user interface that made integration of features and navigating utilities on a mobile communication and computing device much easier than ever before. The series of *Apple vs. Samsung* cases beginning in 2010 represent the start of the "Smartphone Wars." Although many companies later became involved in associated litigation, this case was the central conflict, taking on a scale that stretched over several countries and jurisdictions. The narrative on these two companies and their legal confrontation has been the topic of films and popular periodicals.[56]

A. Background

1. iPhone vs. Galaxy

Top secret efforts on the iPhone began at Apple in 2004. Internal product teams had proposed the concept of a mobile phone with integrated computing in prior years, but Apple CEO Steve Jobs had been reluctant to move ahead due to apprehensions with existing market competition and dependence on third party cellular service companies. He also had technical concerns with achieving adequate internet connectivity on a mobile handset. A major shift in attitude occurred after Apple design director Jony Ive produced impressive smartphone mock-up units that showcased the "multi-touch glass" concept.[57] The company then moved ahead with smarthphone development.

By January 2007 Jobs announced the new iPhone product at the annual MacWorld show in San Francisco, CA. The cell phone establishment did not think the iPhone would be successful and for the first nine months of 2008, the iPhone did not gain much traction. As the market became more

56 Eichenwald, *supra*
57 *Id.*

aware of the iPhone and its features, demand increased to where Apple's production could no longer keep up with demand.[58]

Samsung, which was struggling in the smartphone market, understood it had to react to the iPhone sensation.[59] As the company worked on a new design, it began to resemble the iPhone itself both physically as well as in user interface features. In March 2010 the Samsung Galaxy S product was announced at the CTIA Wireless trade show. [60]

Despite Jobs' initial outrage at discovering the Galaxy S and its similarities to the iPhone, Apple pursued negotiations in hopes Samsung would agree to a license agreement. Then in March 2011 Samsung introduced a tablet computer resembling Apple's iPad2. Viewed as yet another "grand theft," Jobs reached a breaking point and launched a federal lawsuit against Samsung in a Northern California District Court for their infringement on both the iPhone and iPad. Apparently Samsung had been prepared as they responded with countersuits in Germany, Korea, Japan and the U.S. Related suits were eventually brought to Britain, France, Italy, Spain, Australia, and the Netherlands as well as federal court in Delaware and with the U.S. International Trade Commission (ITC).[61]

2. Patent Litigation

The subsequent global legal battle between Apple and Samsung has become famous for its size and scope and is associated with largest jury award for patent infringement in history (over one billion US dollars initially). The case has gone several rounds, spanning years and continents, and involved various patents introduced at each stage.[62] The following discussion mainly considers initial actions taken by the parties in trying to

58 *Id.*
59 *Id.*
60 *Id.*
61 *Id.*
62 Eingestellt von Florian Mueller, *Apple, Samsung provide final list of patents and accused products for California spring trial*, Foss Patents (Feb. 2014), http://www.fosspatents.com/2014/02/apple-samsung-provide-final-list-of.html (accessed Aug 27, 2017)

assert Smartphone rights as well as selected subsequent events that characterize the overall engagement.[63]

This starting round of the patent war was based on seven patents from Apple asserted against Samsung. Samsung's countersuit was based on five patents. The total of twelve patents are described below:[64]

Apple:

- 7,469,381: touchscreen actions, including dragging, pinch zoom, multi-touch, and bounce.
- 7,844,915: Application Program Interface (API) for a touch-sensitive devices.
- 7,864,163: touchscreen zoom and navigation methods.
- D618,677: design patent for physical structure of an early iPhone.
- D593,087: design patent for general outline of another early iPhone.
- D504,889: design patent for layout of an iPad tablet.
- D604,305: design patent for the "graphical user interface" (GPU).

Samsung[65]:

- 7,675,941: mobile phone 3G data transfer capabilities.
- 7,447,516: other mobile phone 3G capabilities.
- 7,698,711: MP3 playback technology for a mobile device.
- 7,577,460: a "communication terminal" for cellphone and camera data transfer
- 7,456,893: a method for indexing user's place in a gallery of images.

It is telling that Apple selected the above seven patents out of their portfolio of more than 1,300 patents in mobile electronics technology. This short-list, the majority of which are design patents, reflect a distillation to the iPhone's most noteworthy and appealing user features.[66] The "Total

63 Charles Mauro, *Apple v. Samsung: Impact and Implications for Product Design, User Interface Design (UX), Software Development and the Future of High-Technology Consumer Products*, PulseUX Blog (Dec 2012), http://www.mauronewmedia.com/blog/apple-v-samsung-implications-for-product-design-user-interface-ux-design-software-development-and-the-future-of-high-technology-consumer-products/ (accessed Aug 25, 2017)

64 David Kravets, *Who Cheated Whom? Apple v. Samsung Patent Showdown Explained,* Wired (July 2012), https://www.wired.com/2012/07/apple-v-samsung-explained/ (accessed Aug 27, 2017)

65 *Id.*

66 Mauro, *supra*

User Interface and Experience" (TUX) engineering community has resultantly taken notice of this case. As one industry expert, Charles Mauro CHFP (Certified Human Factors Engineering Professional) has described, the selected patents from Apple cover largely artistic aspects of both the hardware and software yet, in combination with the user-interface, aims for a "whole greater than the parts effect."[67] The design patents cover the simple but elegant design of the iPhone form factor while the utility patents covered characteristic human interface features designed to ease access to internet resources such as email and web browsing. Samsung on the other hand, appears to have selected their patents "piece-meal" based on each claim's individual chances for broad application to mobile phone technology.[68]

In 2012 a California jury acknowledged Samsung's "copying" of the iPhone and awarded Apple $1.05 billion out of the $2.75 billion sought, but this was only the beginning of a long line of legal battles involving other patent infringement claims.[69] For example, Apple filed another lawsuit against Samsung in February 2012 on another set of patents maintaining that Samsung "has systematically copied Apple's innovative technology and products, features, and designs, and has deluged markets with infringing devices in an effort to usurp market share from Apple."[70]

B. Rulings

Despite the one billion dollar award for Apple in their first case, Samsung has been able to secure increasing amounts of market share as subsequent legal clashes have worn on. They have produced the "Apple-ish, only cheaper" Galaxy smartphone as well as derivative products such as tablets that leverage the same technologies and have gained market share and technical capability in the process.[71]

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67 *Id.*
68 *Id.*
69 Apple Corporation v. Samsung Electronics. Ltd, No. 5:2011cv 01846 (N.D. Cal. Apr.15, 2011)
70 Tibken, *supra* referencing Apple Corporation v. Samsung Electronics. Ltd, No. 5:2012cv 00630 (N.D. Cal. Feb. 8, 2012)
71 Eichenwald, *supra*

For further insight into the extensive litigation, the following offers a selective review of associated rulings. The complex technical exchanges that were to follow also gave rise to fundamental legal questions associated with calculating appropriate damages for product infringement. These issues ultimately made their way to the U.S. Supreme Court.[72]

1. Patent Battles, Product War

Although it appears that the legal engagement between Apple and Samsung has finally drawn to a close with announcement of a settlement in June 2018, this development arrives only after years of costly international litigation. The seven-year confrontation has been characterized by a back and forth struggle that holds true to the popular "war" analogy. Both sides have had rounds of success and failure in the smaller battles confined to subsets of patents or jurisdictions. Some observers felt the first court decision against Samsung would have spelled their end in the smartphone market, but this has clearly not been the case.[73] Although Apple was able to obtain rewards that acknowledge the patent protection that surrounds their iPhone user experience, there were later cases when such patents were called into question and even invalidated. At the same time, although Samsung was often penalized for allegedly "copying" the iPhone and iPad, they were able to show that Apple did indeed infringe on some of their mobile technology patents. This record makes for lack of a clear victor in the smartphone war.

In line with this paper's analysis, this section intends to highlight three of the Apple patents that were found to be either invalid or unclear during subsequent litigation with Samsung. As with the list of original seven patents from the 2011 first filed case, the below utility patents reflect the "Total User Experience" (TUX) aspect of the iPhone product. One of the key questions to be considered later is the potential relationship between Apple's product-centric approach and recent trends in patent quality.

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72 Samsung Electronics v. Apple Inc., No. 15-777 (S. Ct. Dec. 6, 2016)

73 Joe Mullin, *Apple's $120M jury Verdict against Samsung destroyed on appeal*, Arstechnica (Feb. 2016), https://arstechnica.com/tech-policy/2016/02/appeals-court-reverses-apple-v-samsung-ii-strips-away-apples-120m-jury-verdict/ (accessed Aug 27, 2017)

The first two Apple patents for consideration are 8,046,721 and 8,074,172 which describe the "swipe to unlock" and "auto-correct" spell check features respectively. Both patents were ruled invalid in February 2016 by the Court of Appeals for the Federal Circuit because claims "would have been obvious based on the prior art"; reversing the previous decision of infringement by the U.S. District Court for Northern District of California.[74]

Patent '721 primarily claims "A method of unlocking a hand-held electronic device, .. including a touch-sensitive display, the method comprising: ..continuously moving the unlock image on the touch-sensitive display ..wherein the unlock image is a graphical, interactive user-interface object …" The Federal Circuit court opinion provides that the '721 patent is "directed to the 'slide to unlock' feature of the iPhone. As described in the specification, one problem with a portable device with a touchscreen is the accidental activation of features..cell phone manufacturers had long used 'well-known' procedures to prevent this, by locking the phone (i.e., not recognizing any touch inputs).. The '721 patent claims a particular method of unlocking. The user touches one particular place on the screen where an image appears and, while continuously touching the screen, moves his finger to move the image to another part of the screen."[75]

During the trial, Samsung provided two prior art references: a "NeoNode" N1 Quickstart Guide from 2004 and a presentation by "Plaisant" from a computer conference taking place in 1992. They argued these two references make Apple's '721 claims obvious.[76] Samsung's motion for "judgment as a matter of law" (JMOL) on invalidity was initially denied by the California District Court.

The NeoNode art provides an unlocking sequence for a touchscreen phone whereby the user "continuously" moves a finger on the surface of the screen. It also includes the feature of having text reading "Right sweep to unlock" on the screen to instruct users. Even Apple did not deny that this art captured essential elements of their claim, leaving only that Apple added a dynamic on-screen image whereas NeoNode did not call out for any such "moving image" response. Samsung argued that the second reference, the "Plaisant paper," provides this missing element with description of "six different touchscreen-based toggle switches to be used by

74 Apple Inc. v. Samsung Electronics Co. Ltd., No. 15-1171 (Fed. Cir. Feb. 26, 2016)
75 *Id.*
76 *Id.*

novice or occasional users to control two state (on/off) devices in a touch-screen environment." Two of these toggle switch representations, "slider toggle" and "lever toggle" shown below, closely resemble the "slide-to-unlock" feature of the iPhone.[77]

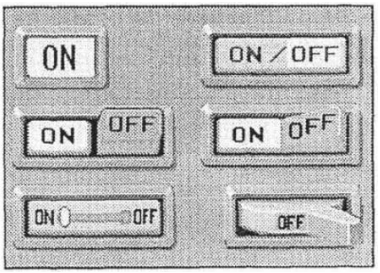

Figure 1: "slider toggle" on the bottom left and the "lever toggle" bottom right[78]

Together, this prior art invalidated Apple's '721 patent.

The second patent ('172, not to be confused with above '721) concerned Apple's claims for an automated spelling correction feature known as "autocorrect." This patent's primary claim is a "method, comprising: a..touch screen display: in a first area..displaying a current character .. in a second area of the touch screen .. displaying the current character string or a portion thereof and a suggested replacement character string.."[79]

As with the '721 patent, it describes a software-based interactive touch-screen feature. In this case the user can have spelling-correction suggestions appear on an intermediate scroll bar. Prior art was identified in U.S. patent 7,880,730 from Tegic Communications, LTD which includes a claim for a "..text entry system comprising .. an auto-correcting keyboard region comprising a plurality of the members of a character set, wherein locations having known coordinates in the auto-correcting keyboard region are associated with corresponding character set members.." Once again, Apple was not able to refute the similarity to this reference but in-

77 *Id.*
78 *Id.*
79 *Id.*

sisted that Samsung had nonetheless copied their recent implementation of this feature with the iPhone.[80]

In a third example, the Federal Circuit reversed findings of infringement by Samsung on Apple patent 5,946,647 based not on invalidity, but interpretation of the claims language. The District court jury had originally awarded nearly one-hundred million dollars to Apple on this patent after Samsung's request for JMOL was denied. Apple patent '647 describes a "tap-to-link" single-touch response feature that allows users to dial numbers or visit websites without cutting and pasting the link. The primary claim provides a "system for detecting structures in data and performing actions on detected structures, comprising: an input device..an output device..; a memory..including program routines including an *analyzer server* for detecting structures in the data, and for linking actions to the detected structures."[81]

Neither Samsung nor Apple had pursued formal interpretation of what comprised an "analyzer server" so the Federal Circuit resorted to an "ordinary meaning" interpretation of their own. Citing another case, Motorola, 757 F.3d at 1304, the court had "construed 'analyzer server' to mean 'a server routine separate from a client that receives data having structures from the client.'" In other words, the term "server" denoted a client-server configuration where a host resource is providing processing capability to a remote client. Therefore Apple's view of the "analyzer server" simply being "a program routine(s) that receives data, uses patterns to detect structures in the data and links actions to the detected structures "– and that "the analyzer server *need not be 'separate from a client*' " was rejected because it ignored the commonly held meaning by those familiar with the art.[82]

Apple's expert witness attempted to retrofit the operation of iPhone's tap-link function into the refined definition by emphasizing the critical software resided on a different portion of the phone's memory and processor and thus could be considered a separate "server" in the established sense. The court rejected this argument stating "this testimony is not sufficient evidence to allow a jury to conclude that the Samsung software met the 'analyzer server' limitation .. client-server computing is a *distributed*

80 *Id.*
81 *Id.*
82 *Id.(emphasis added)*

computing model in which client applications request services from server processes."[83]

2. Section 289 Damages

As if technical aspects of patent interpretation and determining infringement between Apple and Samsung were not complex enough, the magnitude of the judgment awards being generated by juries over various trials soon led to fundamental questions regarding how these values were calculated. For example, in March 2013 U.S. District Court Judge Lucy Koh ordered "a new trial to recalculate some of the damages in the case, striking four-hundred and fifty million dollars off the original judgment against Samsung."[84]

Further questions on damage calculations ultimately made their way to the U.S. Supreme Court with a key decision provided in December 2016.[85] The decision reversed and remanded a prior judgment by the U.S. Federal Circuit Court of Appeals which based damages on total sales enjoyed by Samsung's infringing product line. Leading technology companies such as Google and Facebook had lobbied the Supreme Court to hear Samsung's appeal due to concerns that the sizable judgments made against it "will lead to absurd results and have a devastating impact on companies because of the implications of how patent law is applied to technology products such as smartphones."

In the written summary of the unanimous Supreme Court opinion, Judge Sotomayor first described that "Section 289 of the Patent Act makes it unlawful to manufacture or sell an 'article of manufacture' to which a patented design or a colorable imitation thereof has been applied and makes an infringer liable to the patent holder 'to the extent of his total profit.' ..35 USC. § 289 " It goes on to describe how a jury awarded Apple about four-hundred million dollars in damages according to "Samsung's entire profit from the sale of its infringing smartphones." The Federal Circuit rejected Samsung arguments for reduced damages "because the relevant articles of manufacture were the front face or screen rather than the entire smartphone" and that "components of Samsung's smartphones were

83 *Id.(emphasis added)*
84 Tibken, *supra*
85 Samsung Electronics v. Apple Inc., No. 15-777 (S. Ct. Dec. 6, 2016)

not sold separately to ordinary consumers and thus were not distinct articles of manufacture."[86]

The Supreme Court reversed this Federal Circuit decision and instead held that "in the case of a multi-component product, the relevant 'article of manufacture' for arriving at a § 289 damages award need not be the end product sold to the consumer but may be only a component of that product." § 171(a) of the Patent Act permits "a design patent that extends to only a component of a multi-component product.." Finally, Judge Satomayor provides "because the term 'article of manufacture' is broad enough to embrace both a product sold to a consumer and a component of that product, whether sold separately or not, the Federal Circuit's narrower reading cannot be squared with § 289's text." [87] The case was remanded for calculation of reduced damages.[88]

This decision should have a significant impact on future high-technology litigation in that it bounds potential damage awards for infringement. Many stakeholders have expectedly welcomed the Supreme Court ruling."[89] Nonetheless, these events provide a dramatic example of the tremendous losses that may result from not properly bounding associated exclusive rights in the first place.

C. Analysis

Although the Apple vs. Samsung litigation saga has apparently come to a close, it will take more time to understand the full impact it may have on future technology disputes. In the meantime, there are numerous indications that have been made thus far. Discussed below are notable observations, which include the scale of the litigation, trends in patent protection strategy, and the apparent state of the current patent system.

86 Samsung v. Apple , 15-777 at 1
87 *Id.*
88 Crum, *supra*
89 *Id.*

1. Colossal Legal War

The *Apple vs. Samsung* patent war has taken on a grand scale, lasting more than seven years, costing more than a billion dollars and spread as wide as four continents. Some contend that even though it has been one of the "bloodiest corporate wars in history," Apple "may have won legal battles but still lost the war." A source near Apple reports "that the endless fighting has been a drain on the company, both emotionally and financially." [90] During the last year of his life, Steve Jobs spoke of Apple's patent-violation lawsuit against Google, whose Android mobile operating system enabled Samsung's smartphones: "Our lawsuit is saying, 'Google, you (expletive) ripped off the iPhone, wholesale ripped us off.' Grand theft.'" [91] Perhaps most will identify with Steve Jobs' outrage and agree that Samsung has largely succeeded in mimicking a revolutionary product concept introduced by Apple.

Still, questions remain as to how much of the iPhone was truly protectable from competitors from a patent standpoint and whether the iPhone itself relied on technologies held by Samsung and others. Each party was prepared with plentiful "ammunition" in the form of vast patent portfolios but were selective with their patents when it came to trial. Although this approach may have been strategic, especially in the case of Apple, Judge Lucy Koh had also forced the companies to limit the number of claims set forth in order to ease the process for an overwhelmed jury.[92] Future cases may not have such limits set.

This paper takes the view that the scale of litigation was indeed excessive. Although Apple had some initial success with the 2012 U.S. District Court ruling, the follow-up litigation probably indicated they were starting to throw "good money after bad." Neither Apple nor Samsung achieved complete success in their legal war. In South Korea infringement was found on both sides. In Japan a court did not accept an Apple claim. In Germany, there was a sales ban on the Galaxy Tab 10.1 due to its close match in appearance and function to Apple's iPad2. In Britain, a court

90 Eichenwald, *supra*
91 Diamond, *supra*
92 Paul R. Gugliuzza, *Patent Trolls and Preemption*, 101 No. 6 Virginia Law Review 1579 1590 (October 2015)

found for Samsung, stating that its tablet was "not as cool" as the iPad so would not mislead customers.[93]

2. Invention vs. "Cool" Product

Industry analysis of this case suggests that TUX design will become more important as individual features become less separable from accumulating technology. In light of the Apple case, TUX analyst Mauro asserts:

> "Smart companies going forward will work with their IP counsel to frame patent applications and related litigation toward protecting the total user experience of their products. But the road to an IP strategy like Apple's that focuses on the total user experience may not be an easy one. The current legal system works in exactly the opposite direction by requiring inventors to slice up their products into many features .."[94]

Nonetheless, Apple's strategy of clustering TUX patents appears to have met with some success. Continuing along this path may afford companies more opportunity to fortify their trade dress claims with related patent filings. As developments in TUX become more dramatic and distinguished, companies may begin attempts to patent such combinations "to protect the ..'whole' of their user experience solutions across all relevant customer touchpoints."[95]

The prospect of leveraging patent rights into trademark-like protection is an unintended and detrimental consequence of such a trend. Should identification of a "cluster of patents that combine to drive high levels of user engagement" become an invention itself? TUX developers appear excited that Apple has taken first steps to doing just that.[96] These concerns are discussed further below.

3. Questionable Patents

In addition to revealing Apple's TUX patent clustering strategy, the case also highlights fundamental questions of whether these types of software

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93 Eichenwald, *supra*
94 Mauron, *supra*
95 *Id.*
96 *Id.*

patents should qualify for utility patent protection in the first place. Legal analysts have suggested that both Apple and Samsung incorporated "intellectual property that should never have been patented." [97] Author and legal scholar from UC Hastings College of the Law, Robin Feldman, commented on the favorable ruling for Apple in 2012 with:

> "Regardless of the outcome of the trial, we might want to step back and consider whether society should be granting such powerful rights so easily. Are the features at issue here really deserving of so much protection? .. On the whole, the trial is one more indication of a patent system that has lost its bearings, with litigation rather than innovation leading the way."[98]

The iPhone was undoubtedly an impressive and groundbreaking product from a consumer perspective but whether it deserved the enormous transactional costs associated with utilizing legal resources for prosecution and litigation in this way is a long term question that society will have to answer. Given the descriptions of many of the Apple software patents in contention, it does not appear reasonable for the companies to have spent well over one billion dollars and corresponding public resources to try and secure absolute command of the smartphone market through such means. As the 2016 GAO report indicates, the abstract and ubiquitous nature of software seems to have only added to the patent quality problem.[99]

Transactional costs are not limited to litigation. In an academic article from Berkeley Law School appearing in 2012 author Thomas H. Chia provides:

> "Smartphone companies are amassing enormous patent portfolios in order to remain competitive against a rival's patent portfolio...This patent strategy is analogous to the military tactic of mutually assured destruction. However, continually amassing patents under a mutually assured destruction strategy may not be financially sustainable or desirable from the perspective of technological innovation."[100]

The USPTO is already overwhelmed with applications and wrestling with quality issues. The flood of questionable software patent applications due to this "amassing" only adds to difficulties.

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97 Kravets, *supra*
98 *Id.*
99 GAO-16-490 at 0
100 Thomas H. Chia, *Fighting the Smartphone Patent War with RAND-Encumbered Patents*, 27 Berkeley Technology Law Journal 209, 214 (2012)