I. Introduction

For many Americans the term "patent" is linked to a sense of tradition and cultural icons such as Thomas Edison, inventor of the operational incandescent light bulb. The very image of the light bulb itself has become a symbol for invention or a good idea.[1] Another commonly held notion is that a patent guarantees an individual protection from having his or her idea stolen by unscrupulous competitors. Such protection is to help ensure that the time and expense applied towards developing new products is not lost by those willing to invest such substantial efforts.[2] In fact, these views do represent the mission of the U.S. patent system. However, as one digs further into patent system practices and its history, it becomes apparent that these beliefs only reflect an often elusive ideal. How close the U.S. patent system actually comes to representing this ideal has varied over the years.[3]

Before considering the functionality of the patent system, there is the question of its necessity in the first place. Whether a patent system truly fosters benefits to individuals and society continues to be a topic of debate from both a historical and forward-looking perspective. Opponents of the patent system have long argued that granting inventors exclusive rights runs counter to anti-competitive foundations of a free-market economy by enabling profit interest to overtake the drive for legitimate innovation.[4] They also express that the task of identifying deserving ideas is itself problematic because all inventions leverage the work of predecessors to

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1 Hunter Oatman-Stanford, *Let There Be Light Bulbs: How Incandescents Became the Icons of Innovation,* Collector's Weekly (July 2015) https://www.collectorsweekly.com/articles/let-there-be-light-bulbs/ (accessed Sep 1, 2017)

2 Drew Hendricks, *7 Simple Ways You Can Protect Your Idea From Theft*, Forbes (Nov. 2013), https://www.forbes.com/sites/drewhendricks/2013/11/18/7-simple-ways-you-can-protect-your-idea-from-theft/#7af8b02b1f86 (accessed Sep 2, 2017)

3 Richard A. Posner, *Why There Are Too Many Patents in America*, The Atlantic (July 2012), https://www.theatlantic.com/business/archive/2012/07/why-there-are-too-many-patents-in-america/259725/ (accessed Aug 30, 2017)

4 *An Economic Review of thePatent System: Hearing Before the Subcomm. on Patents, Trademarks, and Copyrights,* 85 Cong.33 39 (1958) (Report of Fritz Machlup)

some extent. Chemist and economist Michael Polanyi describes that any patent system "is essentially deficient, because it aims at a purpose which cannot be rationally achieved. It tries to parcel up a stream of creative thought into a series of distinct claims, each of which is to constitute the basis of a separately owned monopoly."[5]

On the other hand, proponents of the patent system describe a moral and common-sense need to sufficiently compensate those who invest the substantial time and resources required for accomplishing important innovation. Without an incentive very few would be willing to risk such resources. In this view, a patent provides compelling motivation in the form of securing fixed-term exclusive use rights to a new technology and corresponding market advantage to the inventor. Modern economic theory has generally accepted the "monopoly-profit-incentive" scheme to work.[6] Austrian theorist Friedrich von Wieser summarizes this common view with: "the patent right is granted to the inventor, in order to bring his technical leadership, his talents, and genius into the service of society."[7] Another well-known economist, A.T. Hadley, once stated that "a patent system, if properly guarded, seems to be thoroughly justified by its results. In the absence of such protection, few new inventions would be developed."[8]

There are legitimate concerns brought up by both sides of this debate. Overall it appears that the patent systems implemented in the US, Britain and elsewhere have been instrumental in driving individuals and companies to innovate new and useful technology and products. At the same time, even advocates of these systems acknowledge that maintaining an optimal patent system has been a challenging pursuit. Much of this challenge is due to the subjective nature of defining invention alluded to by Polanyi and others.

This uncertainty is said to lead to excessive conflict in the market that exacts a high toll from society by diverting resources from innovation to complex legal engagements. Some of the worst examples of such penalty

5 *Id.* at 29
6 *Id*. at 23
7 *Id*. at 33
8 *Id.* at 37

are "patent wars," prolonged and far-reaching litigation that usually surrounds a monumental technology market opportunity.[9]

The position of this paper is that moral considerations, "money-profit-incentive" and aims for societal benefit provide sound basis for establishment of the U.S. patent system. The dramatic rate of innovation witnessed in the 20th century and beyond suggests that the patent system has provided benefit; but whether it can continue to do so depends on, as A.T. Hadley puts it, whether it remains "*properly guarded.*" This work argues that a central element to guarding a patent system is establishment of effective and reliable guidelines for determining what constitutes a "quality" patent.

As will be discussed, insufficiencies in both defining and enforcing a consistent standard for patent quality have been largely responsible for the heavy transactional costs described by opponents of the patent system.[10] The value and perception of a U.S. patent have been diluted from that of a given right to that of "a chance of an exclusive right" as some modern economists have referred to it.[11] As will also be argued, this issue relates to the element of an invention's *utility* when considering perspectives that were present during early legislation of the U.S. patent system.

This paper will begin by examining the origins of the U.S. patent system before comparing two historic patent wars; that of *Apple v Samsung* (2012) concerning today's smartphone and *Wright v Herring-Curtiss* (1908) concerning invention of the modern airplane in 1903. Finally, analysis and concepts for further investigation will be proposed on the topic of enabling the U.S. patent system to effectively meet future challenges. Part of this enablement uses technology itself to achieve original constructs intended by Founders of the nation almost two-hundred and fifty years ago.

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9 Kurt Eichenwald, *The Great Smartphone War*, Vanity Fair (May 2014), https://www.vanityfair.com/news/business/2014/06/apple-samsung-smartphone-patent-war (accessed Aug 29, 2017)

10 *Intellectual Property: Patent Office Should Define Quality, Reassess Incentives, and Improve Clarity*, Government Accountability Office, GAO-16-490, Report to Chairman, Committee on Judiciary, House of Representatives 1 (June 2016)

11 Described by Professor Joseph Drexl in lecture, IP and Competition Law (seminar), Munich Intellectual Property Law Center (June 2017)

A. The Patent Wars

The 20th century has ushered in a period of momentous progress in information technology including dramatic advances in mobile communication and computing devices. The worldwide smartphone sensation was started by Apple Corporation in 2007 with the introduction of their "iPhone 3." By combining smooth touchscreen functionality with stylish, compact design, Apple introduced a major disruption to the mobile phone market. Apple's rival, Samsung Corporation, acting somewhat as Google's proxy, responded by designing and manufacturing their line of "Galaxy" smartphones which took liberties with protected iPhone product features. Apple responded with a major litigation campaign with their famous founder, Steve Jobs, declaring "thermonuclear war" on Samsung. Jobs considered Samsung to have stolen the iPhone product concept and became dedicated to pursuing patent infringement lawsuits and injunctions accordingly.[12]

Another famed patent war occurring over one-hundred years prior, *Wright vs. Curtiss*, appears to have some interesting parallels to the modern *Apple vs. Samsung* case. In *Wright*, the world-changing invention was that of the airplane. In place of Steve Jobs there was Orville and Wilbur Wright, recognized pioneers of fixed-wing aircraft design. Corresponding to Samsung was Glenn Curtiss, a rival engineer who launched his aircraft business using elements contained in patents filed by the Wrights. Like Jobs' view of Samsung, Wilbur Wright considered Curtiss' actions open theft and dedicated himself to stopping his opponent at any cost. The Wright Company launched an extensive litigation campaign to prevent Curtiss as well as others from using what they viewed as their concept for controlled flight.[13]

Despite the dramatic similarities in these two patent wars, there are of course also substantial differences. *Apple* takes place in the modern information age against a sophisticated backdrop of intensified patent activity and fierce global corporate competition. *Wright* occurred in a compara-

12 Shara Tibken, *Apple v. Samsung patent trial recap: How it all turned out,* CNET (2014), https://www.cnet.com/news/apple-v-samsung-patent-trial-recap-how-it-all-turned-out-faq/ (accessed Aug 30, 2017)

13 Matt Levy, *Yes, The Aviation Industry Was Nearly Derailed by the Wright Brothers' Patent*, Patent Progress (Jan 2015) https://www.patentprogress.org/2015/01/12/yes-aviation-industry-nearly-derailed-wright-brothers-patent/ (accessed Aug 25, 2017)

tively simple setting with a patent system that emphasized utility and economic advancement. Although both cases are considered patent wars the former could indeed be viewed as a "nuclear" war in comparison to the relatively conventional conflict of the latter. Modern patent wars have become dramatically larger in terms of number of patents and international implications. Establishment of voluminous patent portfolios as a form of deterrence and protection has today become a matter of policy with large firms such as Apple and Samsung. In both *Wright* and *Apple* however, observers and historians have argued that the time, resources and expense consumed by such large-scale litigation ultimately do not serve founding principles and objectives of the U.S. Patent System.[14]

B. Purpose of Comparison

Comparing the *Apple* and *Wright* patent wars helps to separate long-standing issues from temporary circumstantial situations that have faced the U.S Patent System. In the early 1900s for instance, patent office examination priorities emphasized proven demonstration of any flying machine-related claims; a stringent requirement that led to the rejection of initial patent filing attempts by the Wright brothers.[15] Modern day patent examination has reached the opposite extreme where relaxed criteria are allowing excessive patent grants.[16]

There are always challenges with properly "tuning" patent examination criteria to particular times and circumstances. Comparison of the *Apple* and *Wright* cases provides illustrative examples of this tuning process. Furthermore, plotting these two data points relative to the baseline defined by origins of the U.S. patent system can improve understanding of its fundamental issues. This paper intends to explore these historical representa-

14 Joe Nocera, *Greed and the Wright Brothers,* NY Times (Aug 2014), https://www.nytimes.com/2014/04/19/opinion/nocera-greed-and-the-wright-brothers.html?_r=2 (accessed Aug 25, 2017)

15 Rodney K. Worrel, *The Wrights Brothers' Pioneer Patent*, 65 American Bar Association Journal 1513, 1514 (1979)

16 Lisa Rein, *Patent Lawsuits Swell and Watchdog Says the Government is to Blame*, Washington Post, (July 2016), https://www.washingtonpost.com/news/powerpost/wp/2016/07/20/patent-office-tktk/?utm_term=.be6d9769eecb (accessed Aug 25, 2017)

tions before providing observations along with recommended approaches for future investigation.