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The Impact of 3D Printing on U.S. Copyright and Trademarks

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Abstract

The ubiquitous use of additive manufacturing (and subtractive manufacturing), better known as "3D Printing" has forced intellectual property (IP) owners to re-evaluate the various types of well-known IP protections available to them, namely, patents, copyrights, trademarks and trade secrets. In one aspect, by shifting the act of "manufacturing" or "making" of a product from a conventional industrial manufacturer to a consumer, the IP holder must determine which, if any, of the traditional IP protections are worth the investment. Acts which have been the signature of infringement, both patent and copyright, have been the making, using and selling of an IP protected product. But if the entity that is doing any of those acts by printing an IP-protected product is a consumer, the IP owner may not be able to recover any significant damages from that single consumer or consumers who actually print (i.e., "make") the product. IP owners must look to see if there are any remedy(ies) in suing the vendors who sell the software files provided to the consumer that are loaded into their 3D printers. From a trademark aspect, where a trademark identifies the source of goods or services in commerce, IP owners need to be concerned about those they license to 3D-print their products; for example, will the end product have the same quality as when the IP owner actually produced the product, since the IP owner's trademark will appear on that printed product? With regard to copyrights, IP owners need to consider that although photographs have copyright the moment they are created, does software of optically scanned 3D objects have the same benefit?

This paper will survey the impact of 3D Printing on copyright and trademark issues and how such IP protections can be, or not be, enforceable to provide value to an IP owner.

3D Printing and Copyright Law

The ability to easily and accurately reproduce three dimensional objects through 3D printing processes has opened up new concerns for owners of copyrights. This portion of this paper explores some of the issues associated with copyright infringement through the use of 3D printing technology.

United States Copyright law protects original works of authorship fixed in a tangible medium [1]. This holds true in most industrialized countries which, along with the U.S., are signatories to the Berne Convention for the Protection of Literary and Artistic Works. Unlike patents and trademarks, copyright attaches to an original work the moment it is created. The most widely-recognized examples of copyright-protected works are in the field of literature and music. A well-publicized example of the latter is being decided as we write: that of the infringement suit against Robert Plant and Jimmy Page over the melody to *Stairway to Heaven*, Users of YouTube and file sharing sites are well aware of how well copyright holders protect their right to exclude others from posting their recordings on the Internet.

Copyright in three dimensional original works is less known publicly, largely because prior to the advent of 3D printing it was not easy to reproduce copyrighted three dimensional works. One notable exception is the steadfast effort of the Disney Corporation to protect the two and three dimensional images of its flagship Mickey and Minnie Mouse characters, so much so that commentators refer to the most recent amendments to U.S. Copyright law as the Mickey Mouse Protection Act in that it arguably extends Disney's copyright in the early 20th Century mouse design to 2023.

Copyright protects only non-functional aspects of a tangible medium. Thus, while there has been much discussion elsewhere over printing patented objects and parts for them, copyright targets the artistic, non-functional aspect of an object. A spoon with a special handle that does not chill one's soup may be patentable because of the soup, but the look of the handle, regardless of the effect on the soup is the concern of the copyright lawyers.

One worrisome aspect of copyright with respect to 3D printing is CAD files used to 3D print objects. Whether the end object itself is protectable by copyright or not, arguably, the CAD file (an original work of expression stored in a tangible medium) is arguably protectable by copyright law, although no test cases have reached U.S. courts on this point. Internet offerings for CAD files to print protected material abound. For example, The Pirate Bay, one well-visited web site, has 3D-printable files that users can download to illegally print items owned by third parties on 3D printers. Current U.S. copyright law contains anti-circumvention provisions. CAD file copyright owners should employ technological measures to prevent access to their 3D printing software files. At that point, those who circumvent the technological measures can be subject to civil and criminal remedies.

Files to print unauthorized copies of copyright-protected three dimensional objects such as animated film icons, toy action figures and even original works of art from digital files are also easy to find on the Internet. For example, thingverse.com, has hundreds of downloadable digital files answering to the search terms such as Disney, Pixar and Star Wars. Ironically, the site also has a gorilla figurine file "inspired" by a granite sculpture by noted appropriation artist Jeff Koons, notable for having been on the receiving side of copyright infringement suits for his "appropriation" style artwork [2].

U.S. copyright law allows a copyright holder to demand a "take-down" of an infringing work from the Internet and the law can be used to remove 3D printing CAD files improperly made available online. Examples of lawsuits forcing such take downs include removal of a 3D printed phone chargers modeled after the Iron Throne from the popular show Game of Thrones and a 3D mushroom based on the comic Tintin.

As 3D printing technologies continue to evolve, allowing more and more users to produce a larger array of objects having an ever-widening range of physical qualities, the potential for copyright infringement will follow suit. For the moment, existing copyright laws appear to suffice to address this concern. In the future, however, just as the advent of digital copying of audio and video works was met with new laws, so too might 3D printing one day require special rules to protect owners of copyrights in three dimensional objects.

3D Printing and Trademark Law

3D printing has far-reaching implications for manufacturers and consumers with respect to intellectual property law in general, and trademark law in particular. Counterfeiting is a $1.8 trillion issue and $225 billion in the U.S. This is approximately 2% of global economic output[3]. A substantial amount of counterfeiting involves trademark (and

related trade dress) infringement. With new and inexpensive access to 3D printing, any owner of a relatively inexpensive machine can become a counterfeiter, from hobbyists to professionals.

While trademark law protects businesses and the good will associated with a business's products, the primary intent of trademark law is to protect consumers from confusion related to the origin of a product. Trademarks identify the source of the products to consumers. However, trademarks are often the most important and valuable assets of the companies that own them.

This portion of this paper is generally directed to U.S. trademark laws, but similar rules typically apply in most other countries. U.S. laws are very well developed due, in part, to an enormous amount of litigation that creates clarity in the law on even the smallest of issues.

A trademark is a word, phrase, word and design combination, or symbol that identifies the source of the goods of company from the goods of other companies. A trademark may be located on the product, its packaging, or on a label on the product or packaging or similar locations.

3D Printing and Counterfeits

Due to ease of manufacturing, 3D printing (particularly in small quantities) may in the future lead to counterfeiting that is at many times the level of today. Companies can lose control of their trademarks if not properly and adequately policed, and therefore, companies must respond to acts of infringement in order to maintain trademark rights. Policing marks also may assist the company in issues unrelated to infringement. For example, if someone is hurt using a counterfeit football helmet, the owner of the trademark on the helmet may get sued and must prove that the helmet was a perfect knockoff. By eliminating or minimizing counterfeiters, such risks decrease.

Finally, 3D printing may actually reduce the demand for products branded with a company's trademarks, particularly for certain types of replacement parts. If someone can quickly and easily 3D print a generic part rather than purchase a branded part at many times the price, the value of the trademark to the company may decrease substantially. For example, if someone can quickly and easily 3D print a hidden, generic component of a broken vacuum cleaner, the owner of that vacuum cleaner may not care to go to the expense of purchasing a branded component.

Basics of Trademark Law

Selecting and Registering a Trademark

Of crucial importance is selecting a proper trademark. The selected mark must be available for use (and preferably registrable) and must be capable of functioning as a trademark. To be available for use, it is critical not to not tread on another entity's "toes" as a result of their prior use of the mark.

Trademark distinctiveness generally runs on a continuum from weakest to strongest as: generic (not registrable – e.g. escalator or aspirin which were formerly used as trademarks.), descriptive (registrable with "secondary meaning" or "inherent distinctiveness")), suggestive (e.g. Sentinel for locks), or arbitrary or coined (e.g. Apple for computers). From a trademark law standpoint, the strongest marks (suggestive or arbitrary) offer the best protection, but from a marketing standpoint, they are not always the most desirable.

The most common reason that a trademark application is refused registration at the U.S. Patent and Trademark Office, is that there is a "likelihood of confusion" between the applied for mark and a mark that is already registered, or has a pending registration. Generally, there is a likelihood of confusion when the marks are the same or similar and the goods of the parties are related, such that consumers would mistakenly be confused into thinking the products came from the same source. Generally, two identical marks can co-exist if the goods are not related.

Marks are considered to be similar if they sound alike, look alike, mean the same thing (e.g. if someone tried to register "Manzana" - Spanish for apple - for computers, it would probably be refused registration due to the fact that Apple for computers exists.

Merely using a particular word or phrase as a domain name or as a business name does not automatically rise to the level of trademark use. For example, a state may allow the use of ABC Corporation for computers, but it may also allow the use of ABC, Inc. or ABCD Corporation for computers. If ABC Corporation started selling computers prior to ABC, Inc. or ABCD Corporation; ABC, Inc. and ABCD Corp. could probably not use their own name on their computers because there is a likelihood of confusion.

A quality registrabilty and availability search is indispensable. A company may go to considerable expense to bring a new product to market, including advertising and molding (or 3D printing) the logo into thousands of products. A search should uncover uses that could be problematic such as a likelihood of confusion with another company's products. A quality search should include actual registrations and applications in the particular jurisdiction or jurisdictions of interest. For example, the U.S. Patent and Trademark Office maintains a database of federal registrations and applications. Searches, however, typically should go beyond this level and include state registrations, common law uses (including internet uses), etc.

Even if not registered, a party may still have enforceable rights (in the U.S. – the Lanham Act and common law).

The Madrid System

The Madrid System is an international system designed to ease the burden of registering trademarks in multiple countries, which otherwise would be required. The Madrid System is a centrally administered system that, if a mark is registered, provides an "international registration" administered by the World Intellectual Property Organization (WIPO). This international application is initially based on an application, such as a U.S. application, in a home country.

Community Trade Mark System (CTM)

The CTM system is a trademark system that applies in the European Union where registration is administered by the Office for Harmonization in the International Market (OHIM).

Trade Dress

Trade Dress refers to the characteristics of the visual appearance of a product or its packaging that identifies the source of the product to consumers. In the U.S., trade dress is protected under the Lanham Act. The laws are designed to prevent a consumer from buying a product believing that its source is actually a different source. Shapes, colors and patterns can all form a basis for trade dress protection.

Trade dress protection, such as protection on the product configuration, is typically much more difficult to obtain than trademark protection. To prove trade dress infringement, the owner must prove that the product is so well known to consumers that the shape alone (or other physical attribute) itself is an identifier of the source of the goods. Such proof requires "secondary meaning" or "acquired distinctiveness" and can typically require many years of use, and may require a substantial amount of advertising. A classic example of the

power of trade dress is the old fashioned Coca-Cola bottle. Without anything more than a consumer seeing the bottle itself, the consumer knows that the product is a Coca-Cola product.

Licensing a Trademark

Licensing is permission by the owner of the trademark allowing a third, unrelated party to legally use the trademark in commerce. Typically, a trademark license is in the form of a written contract. Importantly, in most countries, the trademark owner must monitor the quality of the goods produced by the third party, or it risks abandoning the mark.

Enforcing a Trademark

The owner of a trademark may sue another party that uses a mark in a confusingly similar manner in a trademark infringement lawsuit. Some countries require registration to sue, but the U.S., Canada and other countries allow companies to sue based on common law rights, but registrations offer significant benefits.

When analyzing a potential infringement to see if the "likelihood of confusion" standard for infringement is met, courts look to the strength of the mark (the strongest marks are fall on the suggestive or arbitrary end of the continuum described above), the closeness of the goods, the similarity of the marks, evidence of actual confusion by consumers, marketing channels; type of goods and the degree of care used by consumers when they purchase the goods, the defendant's intent when it selected the mark, and the likelihood of the product lines [4].

Trademark owners must actively police others' use of their marks (both registered and not) to maintain the strength of their marks. For example, if there are many infringers and a trademark owner takes no action knowing that such infringers exist, the trademark owner risks abandoning the trademark such that it is free to use by anyone. Thus, the fact that 3D printing enables practically anyone to knock off a trademarked product and the need to police those infringments will have profound implications for trademark holders in the future.

References

[1] 17 U.S.C. § 101 et seq.

[2] *Rogers v. Koons*, 960 F.2d 301 (2d Cir. 1992).

[3] Netnames, Counting the Cost of Counterfeiting, A Netnames Report, October 2015.

[4] *See, AMF, Inc. v. Sleekcraft Boats*, 599 F.2d 341 (9th Cir. 1979); *See also*, *E.I. DuPont de Nemours & Co.*, 476 F.2d 1357, 177 USPQ 563 (CCPA 1973).

Author Biographies

Scott Slomowitz is an intellectual property attorney with over 20 years of experience in all aspects of IP which includes patents, copyrights, trademarks and trade secrets. He represents large corporations and small businesses, as well as sole inventors in counseling them on how best to protect their IP. He holds an electrical engineering degree from the University of Delaware and worked as a flight controls engineer at Boeing Helicopters for several years. His industry experience, as well as being a patent holder of several inventions himself, places him in the unique role of being a well-seasoned IP attorney and inventor.

Gary Greene is experienced in handling matters in all aspects of intellectual property law, including licensing, litigation, and U.S. and foreign patent and trademark prosecution. He has particular experience in mechanical and electro-mechanical technologies. Mr. Greene is registered to practice before the United States Patent and Trademark Office and is also a licensed professional engineer. Mr. Greene is admitted to practice law in U.S. federal and state courts, as well as at the U.S. Patent and Trademark Office. Mr. Greene obtained a Bachelor of Mechanical Engineering and Master of Laws at Villanova University, and a Juris Doctor at Widener University.

Nicholas M. Tinari, Jr. is a registered patent attorney, whose practice comprises many aspects of intellectual property law, including analyzing, procuring, challenging and enforcing patents and copyrights on behalf of individuals, small businesses, research institutions and multinational corporations. His patent practice encompasses a wide variety of technologies, particularly those in the electronics, imaging, medical device, and software fields. Prior to his law practice, Mr. Tinari was a lead engineer in the aircraft instrumentation and avionics fields designing microprocessor-based analog and digital equipment including hardware and software design. His clients included Eaton Corporation, Litton Industries and Spitz Space Systems.