



3-D Printing and IP: Can They Coexist?

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3-D printing, or as engineers sometimes call it, "rapid prototyping," has been around since the late 1970s when Wyn Kelly Swainson was granted U.S. Patent Number 4,041,476, "Method, Medium and Apparatus for Producing Three-Dimensional Figure Products." Swainson's invention involved a laser that caused covalent cross-linking at the surface of a monomer to produce a three-dimensional figure. Over the years, the technology has developed further with 3-D printing being referred to as additive or direct digital manufacturing. The process for producing a 3-D object involves uploading a digital blueprint that has been created using computer-aided design (CAD) software. The 3-D printer generates the object by an additive process that involves layers of material added to a base by the printer according to the 2-dimensional slices that comprise the digital blueprint of the object. The layers of material being deposited may be in liquid, powder or filament form and are applied and fused together to ultimately form the object depicted in the digital blueprint. The additive process is very attractive to the medical device industry because of: 1) the reduced cost; 2) the waste minimization when compared to the more standard "subtractive" process seen with traditional CNC manufacturing and 3) the ability to make intricate and complex structures.

Essentially, an individual can create a digital blueprint of an object by using a 3-D scanner and downloading the collected information into corresponding CAD software. The digital blueprint can then be downloaded into the 3-D printer to produce a copy of the original object. The ease by which an individual can create and copy objects causes many potential intellectual property (IP) issues and highlights the uncertainty of the coexistence of 3-D printing and the infringement of IP rights.

3-D Printing and Copyright Protection

Copyright protection is involved in two aspects of 3-D technology: the digital blueprints and the objects being copied. Copyright immediately comes into existence for a creative work that has been fixed in tangible medium (paper, canvas, disk, computer, etc.) or when the physical embodiment is generated. Examples of works protected by copyright include writings, drawings, blueprints, sculptures and other creative objects. With this background, copyright protection applies to objects being copied using a 3-D printer that are design oriented. For example, an OEM decides to copy the creative shape of the bearing surface of an elbow prostheses of another company; this act could be seen as copyright infringement. The Copyright Act has teeth, if the creative design has been registered with the U.S. Copyright Office. Specifically, one could collect statutory damage of up to \$150,000 each time the work is copied, if it is determined that the copying was willful. An important rule of thumb is that if you are going to copy an object, you must first determine whether the object is in the public domain or permission from the owner is required.

Copyright protection may also extend to the digital blueprints that one used to drive the 3-D printer. If the blueprint is independently generated, then this document itself is protectable. However, if the individual has copied the digital blueprint, then this act of copying could be seen as copyright infringement. In addition, if the digital blueprint of the design covers only the useful aspects of the copied object, would copying the blueprint or the object be copyright infringement if these aspects are not eligible for protection? As you see, the question of copyright infringement involving 3-D printing has a lot of uncertainty. Some best practices would be to not copy objects that are not clearly in the public domain or blueprints that define the creative aspects of the object. Whenever in doubt, ask permission before copying anything.

3-D Printing and Patent Infringement

Patent infringement through the use of a 3-D printer is entirely different than copyright infringement. Patents protect new and non-obvious inventions, but only when a patent with valid claims has been granted by the United States Patent and Trademark Office (USPTO). Patent infringement occurs when a person other than the owner of the patent uses, makes, sells or imports the patented invention.

The patent infringement litigation that has occurred to date has been focused on the makers of the 3-D printers. Patent



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application filings for new printers and methods of use have increased as this type of manufacturing process continues to evolve. Patent litigation directed to objects made via a 3-D printer has not occurred yet, but will be expected when copying reaches the commercial scale and sales occur.

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For utility patents, any patent owner with rights to a copied object will have to engage in the costly and long journey of proving infringement. The litigation road traveled by the patent owner will be filled with many obstacles, including rules that allow a person to reproduce certain elements of a patented invention. Specifically, if the invention comprises patented and non-patented components, reproduction of the non-patented components has been allowed by the courts.

Patent owners may attempt to take the tack of suing 3-D printer manufacturers or providers of the CAD created digital blueprints based on the theory of indirect infringement. The

hurdle of having to prove the actual knowledge element that is required to hold a party responsible for indirect and contributory infringement may be too high to overcome in order to recover damages. What does this all mean to the owners of utility patents? At this point in time when most of the use of 3-D printing is non-commercial, utility patent owners should continue to diligently monitor the marketplace and determine on a case by case basis when and how to take action to stop infringing behavior.

If the object produced by the 3-D printer is protected by a design patent, then the patent owner may have additional enforcement options. As utility patents protect how an object works, a design patent protects how something looks. To qualify for protection, the object must be new, original and have an ornamental element to it. The enforcement of design patents involves the patent owner proving that an "ordinary observer" likely would confuse the copied object with the patented design. The courts have stated that the patentee must show that the accused infringing design would appear to be "substantially the same" or similar as the patented design to an ordinary observer (*See Egyptian Goddess v. Swisa*, 543F.3d 665 (Fed. Cir. 2008) (en banc)). The remedies available to a design patent owner to recover damages are also different than for utility patents. Specifically, the patent owner may recover

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from the infringement their total profits received from selling the infringing design.

With the more patent owner friendly “ordinary observer” test and infringing 3-D printers users at risk of having to pay out any profits they receive from selling the copied design, product developers should look closely at their inventions to evaluate whether filing a design application is appropriate to protect against 3-D printer infringement.

3-D Printing and Trade Dress/Trademark Protection

3-D printing of an object may also run afoul of trademark trade dress protection. Trade dress is essentially a wordless trademark. It is the visual appearance of a product (e.g., the VW Bug shape) or its packaging (e.g., the shape of a Coke bottle) that signifies the source of the product to the buying consumers. To qualify for protection, the trade dress must be either inherently distinctive or have developed secondary meaning (i.e., been used in the marketplace for a long time, like five years) that assists the consumer in identifying the source of the product.

Trade dress and design patents focus on the design element of a product; therefore, there may be crossover from an enforcement standpoint. If a 3-D printer creates an object that an owner of the trade dress thinks will cause confusion or mistake to the consumer as to who produced the product, or may deceive the consumer as to the origin of the goods or services that are associated with the trade dress, then the person using the 3-D printer to create this object may be liable for trade dress infringement. Given the nature of trade dress, the challenge to prove consumer confusion and the limited remedies, trade dress protection may not be the best avenue to take when implementing infringement protection strategy from users of 3-D printing.

Trademarks would appear to provide the least protection from 3-D printing infringement, because trademarks usually come in the form of words, sounds, colors, designs and logos that identify a product and/or service with a particular source of these products or services. The standard of finding infringement is similar to that of trade dress, in that the trademark owner must show that the infringer’s use of their mark has created a likelihood of confusion about the origin of the infringer’s goods or service. The applicability of trademark protection to objects produced by a 3-D printer may be seen in the case where a logo or slogan is incorporated directly into the produced object. The likely scenario occurs when the digital blueprint has been created by scanning both the object and trademark into the CAD file. As most objects produced currently by 3-D printers are singular, protecting your object or design via a trademark may prove to be difficult. However, as 3-D printing moves towards commercial production of products, it may begin to play a more important role.

3-D Printing and Trade Secrets

The last type of IP, trade secrets, may also impact the development and use of 3-D printing. Trade secrets protection varies from state to state but generally, protection is offered to certain items (i.e., formulas, client lists, manufacturing processes, compilation of strategic business information) that if kept secret increase the competitive advantage and value to the company. Trade secrets may play a role in the development of 3-D printing as this technology moves closer to use on a commercial scale, and more and more innovative processes and techniques, including proprietary know-how, will be developed by the users

to increase the efficiency of the technology. As this evolution in the 3-D printing manufacturing process occurs, lawsuits will arise over the misappropriation of trade secrets that may cover these various proprietary adaptations to the manufacturing processes, the secret code changes

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to software or other key components of the 3-D printing technology by departing employees. As noted above, because the standards that qualify one’s secret as a trade secret will vary from state to state, care must be taken to ensure all appropriate actions are followed to achieve trade secret designation.

It is clear that 3-D printing technology will continue to develop and move from the consumer usage to full scale production use. As the technology moves toward this inevitable end, owners of IP must be prepared to protect and enforce their ownership rights. The analyst group Gartner has predicted that by 2018, 3-D printing will result in a loss of \$100 billion per year in IP globally.

Enforcing one’s IP against 3-D printer infringers will be challenging given the various defenses that may be available, as well as the rise in the number of affordable 3-D printers in the world. Gartner has also estimated that in 2014, less than 100,000 low cost 3-D printers will be sold; however, sales of 3-D printers will double each year thereafter. The resulting increase in printers will make it even more difficult to patrol one’s IP. Companies will need to implement strategic monitoring programs to enforce their IP and learn to adapt their enforcement policies to the changing culture of 3-D printing.

This article was written for informational functional purposes only and should not be interpreted as legal advice.

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