

## Intellectual Property Issues Stacking Up for 3-D Printing

*If you have any questions regarding the matters discussed in this memorandum, please contact the following attorneys or call your regular Skadden contact.*

**Douglas R. Nemeč**  
New York  
212.735.2419  
douglas.nemec@skadden.com

**Kristen Voorhees**  
New York  
212.735.3685  
kristen.voorhees@skadden.com

\* \* \*

*This memorandum is provided by Skadden, Arps, Slate, Meagher & Flom LLP and its affiliates for educational and informational purposes only and is not intended and should not be construed as legal advice. This memorandum is considered advertising under applicable state laws.*

Four Times Square, New York, NY 10036  
Telephone: 212.735.3000

[WWW.SKADDEN.COM](http://WWW.SKADDEN.COM)

In the 1980s and 1990s, viewers of the television series “Star Trek: The Next Generation” regularly saw Patrick Stewart procure hot tea from a “replicator,” which generated his tea — cup and all — instantly on demand. Even then, such technology was not entirely fantastical, as a method for three-dimensional (3-D) “printing” already had been patented. Today, the use of 3-D printing is proliferating rapidly, with companies incorporating the technology into their manufacturing processes and consumer printers selling for as little as \$250.

Like many cutting-edge technologies, 3-D printing raises a host of knotty legal issues, including questions of ownership, patent eligibility, trade secrets and other intellectual property issues. As such, the topic remains ripe for debate.

### 1. Introduction to 3-D Printing

3-D printing is a manufacturing technique that produces three-dimensional, tangible objects. Typically, the objects are printed layer by layer, each one stacked on another.

The design for the printed product is created on a computer and sent to a printer, which can manufacture nearly any design that fits within its parameters. Highly intricate and complex objects emerge fully assembled, complete with moving parts or hinges.

To date, 3-D printers have been utilized to produce objects both fantastic and mundane, including human tissue, metal and plastic handguns, and replacement parts for broken appliances, to name just a few.

### 2. Who Owns the Idea? Who Owns the Design?

Perhaps the most basic question raised by 3-D printing is: Who owns the 3-D-printed work? Is it the person who conceptualizes the design, the one who creates the computer-aided design (CAD) file or the one who operates the 3-D printer? In fact, all three may have contributed creative input — a designer creates the core concept, a drafter creates a computer-readable version of the designer’s idea, and an operator adjusts materials or curating parameters in the printer.

As courts begin to decide more and more disputes relating to 3-D technology, they likely will turn to copyright law, which traditionally has covered intellectual property protection in such related areas as architectural drawings and sculptural works. Copyright vests initially with the author of the work, which means the creator of the 3-D design usually will hold the copyright in the design file. In addition, if two or more people contribute some form of original expression to the work, they may be deemed joint authors. Thus, for complex 3-D-printed objects, the designer, drafter and operator may all become joint authors if the work is considered a collaborative effort. Each of the joint authors can independently license the copyright or sell his or her interest. In most cases — *e.g.*, when there is an express work-for-hire agreement or similar contract dictating who owns which property right — it likely will be clear who owns the ultimate object.

### 3. Protecting Proprietorship Among Open-Source Design Elements

Companies may soon contend with the same open-source issues in tangible manufacturing that currently plague software companies: Employees who unknowingly or carelessly incorporate another's open-source design in a component part may jeopardize the company's ability to later assert ownership or inventorship over the whole.

In the software industry, companies frequently establish policies for the proper use of open-source code. For example, a company may require software developers to completely abstain from utilizing open-source code, in order to ensure maximum proprietary protection. Alternatively, a company may permit the use of such code but institute a rigorous tracking system to monitor the portions of its software that rely on open-source information so that those portions can be excluded from copyright filings and/or license agreements. Companies developing 3-D-printable designs may soon choose to do the same to monitor or prevent unauthorized incorporation of publicly available design elements.

### 4. Patent Eligibility: Recent Decisions Build Uncertainty for 3-D-Printing Applications

The standard for whether an invention is eligible to be patented has changed dramatically in recent years. Two recent U.S. Supreme Court opinions have denied patent eligibility for certain computer-implemented processes and isolated DNA sequences.<sup>1</sup> Both cases, perhaps surprisingly, may impact future uses of 3-D printing.

For example, if a scientist uses a 3-D printer to replicate human tissue, should he or she be permitted to patent the manufactured tissue? In *Assoc. for Molecular Pathology v. Myriad Genetics, Inc.*, the Court found that synthesized complementary DNA is patentable but that isolated strands of naturally occurring DNA sequences are not. If the 3-D-printed tissue is identical to "naturally occurring" tissue, the tissue itself may not be patent-eligible under *Myriad*, although the printer used to create the tissue could be. Likewise, product-by-process claims (*i.e.*, patented inventions described by the process that made them rather than their direct characteristics) may face eligibility challenges in court, where the "process" is 3-D printing but the "product" is a naturally occurring object. On the other hand, if the 3-D-printed tissue represents an improvement over "naturally occurring" tissue, then perhaps the tissue itself may be patent-eligible. Current patent law, therefore, may create a quandary for human-tissue printers: The closer the 3-D-printed tissue is to the real thing, the less protectable it may be.

In addition, certain improvements to 3-D design software may no longer be patent-eligible. Under the Supreme Court's recent decision in *Alice Corp. Pty. Ltd. v. CLS Bank Int'l et al.*, computer-implemented inventions, such as software, may need to evidence a "technological improvement"<sup>2</sup> to the field of 3-D printing to be patentable. For example, faster algorithms or more powerful design tools alone may not be sufficient to grant protection because streamlined calculations may not be a "technological improvement" to the field, as they may require only a "generic computer to perform generic computer functions."

### 5. Are 3-D-Printer Designs Trade Secrets?

Once publicly disclosed, a product design almost certainly loses eligibility for trade secret protection. However, if kept secret, 3-D-printing CAD files can qualify as protectable.

<sup>1</sup> See, e.g., *Assoc. for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107, 569 U.S. \_\_\_, Slip Op. 12-398 (U.S. June 13, 2013) (holding that a naturally occurring DNA segment is a product of nature and, therefore, not patent-eligible, but cDNA is patent-eligible because it is not naturally occurring); *Alice Corp. Pty. Ltd. v. CLS Bank Int'l et al.*, 134 S. Ct. 2347, 573 U.S. \_\_\_, Slip Op. 13-298 (U.S. June 19, 2014) (finding that a computer-implemented method of intermediated settlement is not patent-eligible).

<sup>2</sup> *Alice Corp. Pty. Ltd. v. CLS Bank Int'l et al.*, 134 S. Ct. 2347, 573 U.S. \_\_\_, Slip Op. 13-298, at 15 (U.S. June 19, 2014).

In *Ritani, LLC v. Aghjayan et al.*,<sup>3</sup> the court denied a motion to dismiss trade secret misappropriation claims that had been based in part on the theft of 3-D-printable CAD files. Ritani, a high-end jewelry manufacturer, had sued its former CEO, Harout Aghjayan, for copyright infringement and trade secret misappropriation after Aghjayan left Ritani and founded his own jewelry-manufacturing companies.

Ritani alleged that many of its jewelry designs, including its CAD files, constituted valuable trade secrets. The company protected such trade secret designs by using confidentiality agreements and implementing electronic security measures on its computers. Ritani alleged that Aghjayan misappropriated the CAD files and attempted to copyright the designs, allegedly “tweak[-ing]” the designs “to save time and money, rather than undertake the slow process of building jewelry designs from scratch.” Later, Aghjayan purportedly purchased a 3-D printer to manufacture wax models using the CAD drawings that he created while employed at Ritani. The court found that Ritani had alleged sufficient details to establish that the files were trade secrets.

Although the court did not address whether the design files may have lost trade secret protection through the sale of the designed jewelry, such a defense is likely to arise in future disputes. Specifically, if the CAD file merely captures the three-dimensional design of a publicly released product, on what basis can the file be considered secret? Creative litigants may argue that CAD files can be difficult to create from scratch even with access to a finished product, and that the valuable information, therefore, is the specific data preserved in the file rather than the overall concept of the object. Future courts will likely decide on a case-by-case basis whether a particular file can contain information sufficiently detailed to preclude a disclosed product from destroying the file’s trade secret protection.

## 6. Threats to Tangible Trademarks and Trade Dress

What “copy and paste” did to jeopardize digitally stored intellectual property, 3-D printing may do to intellectual property captured in a tangible form: Sculptors may soon lose control over the replication of statues, vases and architectural models in the same way that modern musicians contend with viral replication of digitized songs. The unauthorized duplication of 3-D-printed designs not only raises copyright issues but also threatens to undermine trademark, trade dress and design patent rights.

Considering the wide range of materials that can be printed and the level of complexity that can be employed, realistic counterfeit products may be increasingly easy and profitable to make. Designer jewelry, for example, possesses a distinct design that may soon be vulnerable to 3-D-printed forgery. Printers anywhere in the world could produce jewelry essentially indistinguishable from copyrighted designs by well-known brands. Counterfeiting will no longer be limited to skilled imitators; as soon as a design is captured in a CAD file, anyone with access to a 3-D printer will be able to create a convincing replica.

Traditional trademark and trade dress law will continue to govern whether a given design infringes the rights of a trademark holder. Even so, as in the music industry, the possibility of enforcement may be small compensation for the devastating impact of widespread infringement. Although companies may eventually turn to systems for electronically stored designs that resemble the music industry’s Digital Rights Management system, for now it may suffice to simply limit distribution of CAD files within and without the company to minimize the risk of disclosure.

---

3 *Ritani LLC v. Aghjayan et al.*, 880 F. Supp. 2d 425, 450-451 (S.D.N.Y. 2012).

## 7. Conclusion

Time will tell whether old rules in intellectual property law are sufficiently flexible to adapt to the nuanced problems raised by 3-D printing. In the meantime, recognizing the potential issues can go a long way toward ensuring that 3-D printing becomes a company's next great technology rather than its next great liability.