

## 3D Printing Requires 4D Thinking on Intellectual Property

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Stories of new uses for 3D printing seem to appear almost daily, as the technology finds its way into everything from cases for mobile phones to firearms. As it moves from industrial settings into classrooms, homes and beyond, this transformative technology challenges intellectual property rights.

What can be copied and reproduced? Conversely, how can products be protected against unwanted copying and reproduction?

There are no intellectual property provisions exclusively dedicated to 3D printing. Rather, depending on the context, 3D printing may engage any one or more of copyright, trademarks, industrial designs and patents.

Copyright protects works that are the product of creative expression. In other fields, copyright protects anything from literary works to computer software. With 3D printing, copyright may exist in some CAD files used to reproduce an object (when created by a person), or in the artistic design of the object itself. However, copyright contains an unusual exception for designs applied to “useful articles”. When a useful article featuring a copyrighted design is reproduced more than 50 times, copyright protection is effectively lost. There are still further exceptions to this exception, which are best left to a more detailed discussion.

Industrial designs (called “design patents” in the United States) safeguard the visual features of shape, configuration, pattern or ornament – or any combination of these features – applied to a finished article. Crucially, industrial designs cannot be obtained for features of a “useful article” that are dictated solely by utilitarian function. Designs only protect the ornamental aspects of a product. Nevertheless, industrial designs may be critically important in preventing copying of a product, since 3D scanning and printing of commercial articles is likely to closely mimic the shape of finished products.

Trademark law protects words, designs, symbols and even shapes that serve to distinguish the source of goods. Trade dress is a particularly interesting issue, with the shape of a Coca-Cola bottle being the classic example. Naturally, printing replica bottles and unauthorized selling of an off-brand soda is certain to attract unwanted interest. But in the electronics sphere, printing circuit boards with distinctive marks or shapes may also attract liability. However, even subtle alterations of the design could be sufficient to avoid infringement in some cases. Moreover, 3D printing for personal, private uses may be capable of avoiding trademark infringement.

Finally, 3D printing also forces consideration of patents. The making of a patented article may be an infringement of product claims, even if the claims predate the widespread use of 3D printers. In addition, the process by which an article is made may, in some cases, infringe method or process patents.

Few areas of commercial activity have the potential to engage and challenge so many types of intellectual property, and it is wise to consider all aspects of intellectual property – and consult with an expert – when bringing 3D printers into the manufacturing workflow, or when developing products that have the potential of being copied by 3D printing.