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Intellectual Property Issues in 3D Printing

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ABSTRACT

The tremendous advancement in Information Technology and engineering has given rise to a lot of emerging technologies such as 3D printing, the Internet of Things and many more. As their popularity is significantly increasing day by day, a lot of legal issues are also increasing along with it. This article explains the concept of 3D printing or additive manufacturing and also talks about the Intellectual Property issues which arise after an object is 3D printed.

There are very high chances of patent and copyright infringement when an object is built with the help of 3D printers. Likely infringement scenarios are illustrated with the help of suitable examples. Further, the current status of IP law which talks about 3D printing is dealt with as per Indian and global law. A few measures to curb the unauthorized use of 3D printing are highlighted which could help to prevent infringement. Lastly, a very famous and first of its kind controversy with respect to 3D printed weapons has been summarized. As 3D printing is going to grow at a rapid pace in the coming future, so would be the legal fraternity for tackling the issues arising out of these new technologies.

I. WHAT IS 3D PRINTING?

The 3D printing process usually starts either with a digital file in which the object to be printed is digitally formatted using either 3D print software or a 3D scanner. The file is then exported to a 3D printer using dedicated software, which transforms the digital model into a physical object through a process during which molten material is made up layer upon layer until the finished object is built. This process is also referred to as additive manufacturing. 3D printing helps in producing complex and functional shapes by using less material than traditional manufacturing methods.²

Today the term is used as a generic label for a variety of related processes. Central to most of them is computer-aided design or CAD. Using CAD programs, engineers build a three-dimensional computer model of the object to be built up.

With the help of a 3D printer, anyone can build anything with a wide variety of materials like

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² *3D printing and IP law*, https://www.wipo.int/wipo_magazine/en/2017/01/article_0006.html [Accessed 1 March 2022].

plastic, glass, metal, polymers, human tissue, wax, sand etc. In such circumstances, it poses a great challenge to find out the infringers of the patented object. There has to be some mechanism to tackle these issues precisely.

II. HOW 3D PRINTING AFFECTS THE INTELLECTUAL PROPERTY RIGHTS SYSTEM

The patent issues which have been posed by 3D printing are the same as some of the copyright issues created when people started using the internet to share books, software, songs and movies. Just as a regular printer makes it easy to print a copyrighted book downloaded from the internet, a 3D printer makes it easy for anyone to build a patented object at home. Every time a 3D printer manufactures a patented product without authorization from the patent holder, the owner of the printer could be held liable for patent infringement. But it won't be easy for the patent owner to detect or prove infringement.

To quote an example of a likely patent infringement scenario: A hobbyist makes a CAD file of a patented invention without the patent owner's authorization and uploads the file on the internet where other users can download it and build their own versions. To successfully enforce his rights, the patent holder would need to prove that someone (whether the person who made the CAD file, the person who used the file to build the patented object, or both) is liable for either direct or indirect infringement.³

3D printing has caused ripples in the IP rights regime of several jurisdictions, particularly in light of the law pertaining to patents. It is estimated that 3D printing will result in the global loss of billions of dollars per year by the end of this decade. In addition to this quantifiable loss, there is also the intangible cost of inventors' subsequent distrust in the patent regime. 3D printers are a major cause of concern due to their ability to manufacture in the microcosm. When patented products are being printed at home, enforcement becomes nearly impossible.

A copyright owner has the exclusive right to copy or reproduce his work. The process of scanning a copyright-protected 3D object involves scanning in order to make unauthorized copies of the work. This gives rise to copyright infringement and may subject the infringer to significant legal liability. Copyright protection is applicable to objects copied and then 3D printed that are design-oriented. Useful articles are not eligible for copyright protection. For example, a table is a useful article but does not have copyright protection. But the ornamental design on the back of the table has it. If consumers would turn into manufacturers, monitoring of consumer-oriented home-based printers for infringement would become difficult, leaving

³ Henry, M., How 3D Printing challenges existing IP law, <https://henry.law/blog/3d-printing-challenges-patent-law/> [Accessed 2 March 2022].

many such cases undetected.⁴

III. HOW CURRENT IP LAW HANDLES 3D PRINTING

Protecting an object from being 3D printed without permission does not raise any particular IP issues as such. Copyright protects the originality of work and the creator's right to reproduce it. This means that if copies of an original object are printed in 3D without permission, the creator can obtain protection under copyright law. Similarly, industrial design rights protect an object's ornamental and aesthetic appearance i.e. its shape and form, while a patent protects its technical function, and a trademark allows creators to differentiate their products from those of their rivals.⁵

Article 6bis of the Berne Convention for the Protection of Literary and Artistic Works, which establishes minimum international standards of protection in the field of copyright, states that the author has "the right to claim authorship of the work and to object to any distortion, mutilation or other modification of, or other derogatory action in relation to, the said work, which would be prejudicial to his honour or reputation." If the 3D printed object is granted patent protection, certain national laws, like the Intellectual Property Code of France (Article L 613-4), prohibits supplying or offering to supply the means to use an invention without permission. Following this approach, patent owners should be able to seek redress from third parties for supplying or offering to supply CAD files on the grounds that these are an "essential element of the invention covered by the patent".

Simply put, each printed copy of an invention is a lost potential sale to the patent holder. According to §48 of The Patents Act, 1970, ('1970 Act'), a patent holder has the right to prevent third parties from making, using or selling any patented product without their consent. As is evident, unlike copyright, the patent goes a step further and prohibits mere usage too, and not just sale. Therefore, making patented products utilizing 3D printers and thereafter using these products, would inevitably be considered as infringement under the 1970 Act.⁶

Although the CAD file is called a design, it doesn't come under the legal definition of a design in all cases. S. 2(d) of the Designs Act of 2000 states that the visual features have to be applied by an industrial process. The term "industrial process" has been interpreted by the legislature to imply a procedure carried out on a large scale. Most of the existing 3D printing (which is

⁴ Kapoor, D, How Does 3D Printing Impact the IP Ecosystem? Challenges and Risk Mitigation., <https://www.linkedin.com/pulse/how-does-3d-printing-impact-ip-ecosystem-challenges-risk-kapoor> [Accessed 2 March 2022].

⁵ *3D printing and IP law*, https://www.wipo.int/wipo_magazine/en/2017/01/article_0006.html [Accessed 1 March 2022].

⁶ The Patents Act, 1970, §48, Act of Parliament (1970).

used mainly for manufacturing) might fit that definition. However, with the arrival of portable 3D printers in homes and commercial spaces, the CAD files used therein do not fit the definition of designs as per the Act as no large scale application is involved. The solution to this inconsistency would probably be to revert to copyright protection as it persists in artistic works, on which the designs are based.⁷

IV. MEASURES TO CURB UNAUTHORIZED USE

To curb illegal use, if the object has copyright protection, rights holders can take the help of technological protection measures, the circumvention of which is expressly forbidden as per the WIPO Copyright Treaty (Article 11). These measures make it possible, to mark an object and its associated CAD file with a unique identifier to monitor its usage. There has to be a close collaboration between rights holders and 3D printer manufacturers in applying these measures to models intended for 3D printers. Similarly, collaborations with platforms or websites that make 3D files publicly available could help curb unauthorized use.

With such measures in place, it would make it possible to set up a legal offering of downloadable 3D print files. While online 3D printing services such as i.materialize are now widely available, one can imagine that their future evolution will follow that of online music delivery with the emergence of subscription models that allow users to download 3D print files in return for a subscription fee. Autodesk's cloud-based product innovation platform, Fusion 360 is an example of readily available 3D printing software.⁸

V. CONTROVERSY

A 26-year-old Zimbabwean national, who was studying at London South Bank University, pleaded guilty to two charges of possessing a prohibited firearm and two of manufacturing a prohibited firearm under the 1968 Firearms Act, using a 3D printer. In the first case of its kind, Tendai Muswere confessed to using the printer to build a revolver and a handgun out of plastic resin at his London flat. He claimed he was producing props for a university film project as well as he was not aware that the components he had made were capable of being fired and later refused to comment about his film project.

Acting Detective Sergeant Jonathan Roberts, from the Central West CID, who led the investigation, said: "This conviction, which I believe is the first of its kind relating to the use

⁷ Barooah, S, 3D Printing and Indian Copyright Law, <https://spicyip.com/2014/01/guest-post-3d-printing-and-indian-copyright-law.html> [Accessed 3 March 2022].

⁸ 3D printing and IP law, https://www.wipo.int/wipo_magazine/en/2017/01/article_0006.html [Accessed 1 March 2022].

of a 3D printer to produce a firearm, has prevented a viable weapon from getting into the hands of criminals.” He now faces a five-year statutory minimum sentence for possession of a prohibited firearm as well as a suspension from his studies at LSBU.⁹

VI. CONCLUSION

3D printing or additive manufacturing has many life-changing, revolutionary applications, from medicines to prosthetics and from complex aircraft components to food and fashion. As the use and application of this emerging technology gather momentum and digital transformation continues to grow, 3D printing is likely to become deeply embedded in our daily lives. Beyond the issues outlined above, the use of 3D printing raises other important legal questions, for example in quality assurance, legal and regulatory issues and public order. The current family of IP laws in India is not obsolete, however, these laws can be expanded wide enough to encompass modern, revolutionary technologies like 3D printing. Additionally, accurate amendments in the existing setup shall aid and provide clarity to the status and treatment of emerging technologies under Indian laws. Societies at large and laws are constantly challenged against new innovations and the task is to maintain a balance between rights of various individuals across sectors. 3D printing is one of the few examples of such innovations and there is no better solution than to embrace it since the technology is evolving at a rapid pace.

⁹ BBC News, *Man guilty of making a gun using a 3D printer*, <https://www.bbc.com/news/newsbeat-48695173> [Accessed 3 March 2022].