

**Topic  
Brief 20**

**3D printing - the future:  
IP implications of 3D  
printing, 3D scanning  
and customisation**

## Brief 20



In looking to the future, the question that needs answering is whether 3D printing poses an immediate threat to IP laws.

# 3D printing the future: the intellectual property implications of 3D printing, 3D scanning and customisation

## Introduction

In 2012, the Big Innovation Centre, in their Report ‘Three Dimensional Policy: Why Britain needs a policy framework for 3D Printing’ provided a number of recommendations. A key recommendation was to review the intellectual property implications of 3D printing<sup>160</sup>. Whilst a number of academics<sup>161</sup>, have examined the implications for intellectual property (IP) law as a result of the recent proliferation of 3D printing, there continues to be limited literature on the topic. This briefing note aims to capture the essence of some of the issues affecting IP in its application to this new technology.

3D printing or additive manufacturing refers to the process of creating a product by adding material layer-by-layer. This direct approach to part production was initially termed ‘rapid manufacturing’. However it failed to gain popularity and the American Society for Testing and Materials adopted the term ‘additive manufacturing’<sup>162</sup> (AM), which in recent years has been referred to as 3D printing – a term which is widely used by the media and general public<sup>163</sup>. The process is particularly powerful as it can produce products of almost any shape or level of intricacy, and is not restrained by the limitations of other more traditional manufacturing techniques.

160 *Ibid.*, see p. 33. See also, Intellectual Property Office, *3D Printing: A Patent Overview* (Newport: Intellectual Property Office; November 2013), p. 10. Available at <http://www.ipo.gov.uk/informatics-3d-printing.pdf>

161 Bradshaw S., Bowyer A., & Haufe P., The Intellectual Property Implications of Low-Cost 3D Printing (April 2010) Vol. 7, Issue 1 *Script-ed* pp. 1-31; Mendis D., Clone Wars: Episode I – The Rise of 3D Printing and its Implications for Intellectual Property Law: Learning Lessons from the Past? [2013] 35(3) *European Intellectual Property Law* pp. 155-169; Mendis D., 3D Printing Enters the Fast Lane [2014] *Intellectual Property Magazine*, pp. 39-40; Mendis D., Clone Wars: Episode II – The Next Generation: The Copyright Implications relating to 3D Printing and Computer-Aided Design (CAD) Files [2014] 6(2) *Law, Innovation and Technology* pp. 265-280; Li P., Mellor S., Griffin J., Waelde C., Hao L., & Everson R., Intellectual Property and 3D Printing: A Case Study on 3D Chocolate Printing [2014] 2 *Journal of Intellectual Property Law and Practice*, pp. 1-11; Weinberg M., *What’s the Deal with Copyright and 3D Printing* (2013) available at <https://www.publicknowledge.org/news-blog/blogs/whats-the-deal-with-copyright-and-3d-printing>

162 Hague R., and Reeves P., ‘Additive Manufacturing and 3D Printing’ (2013) 55 *Ingenia* 38, 39-40.

163 ‘Additive manufacturing’ refers to the production of end-use layer manufactured parts produced within a business-to-consumer supply chain. ‘3D printing’ is used to refer to the creation of layer-manufactured products within the home or community.

A further point about 3D printing is that its function depends on it being ‘fed’ a well-designed electronic design file, which, for example, could be a Computer-Aided Design (CAD) file, that tells it where to place the raw material. In fact, ‘a 3D printer without an attached computer and a good design file is as useless as an iPod without music’<sup>164</sup>. Therefore, the importance of a good object design file or CAD file cannot be underestimated in the 3D printing sphere. The file can be created automatically by 3D scanning. Given a good input, a 3D printer can manufacture an unlimited number of copies of the product.

### Online Platforms, Object Design Files and 3D Scanning

The increase in the number of online platforms dedicated to sharing 3D printing design files has implications for IP, particularly, copyright law. Online platforms such as *Thingiverse*, *123D*, *Shapeways*, *GrabCad* amongst others provide object design files, which are sometimes in breach of copyright law. To give one example, in August 2014 Pokémon targeted 3D printed designs available on online platform Shapeways, citing copyright infringement<sup>165</sup>.

There is also the question of the copyright status of object design files, or CAD files, as they are more commonly known. With differing legal opinions on computer software in EU and UK, the position remains unclear and the application of these rulings to 3D printing has raised more questions than answers<sup>166</sup>.

A third issue arises in relation to online platforms and 3D scanning, which allows for the use and re-use of physical objects. The ability to modify the scanned files by using online tools such as Meshmixer, MakerBotDigitizer amongst others has the potential to infringe copyright (through scanning) whilst at the same time create a new copyright by applying creative choices, such as the “intellectual creation of the author reflecting his personality and expressing his free and creative choice”<sup>167</sup> in its production.

164 Lipson H., and Kurman M., *Fabricated: The New World of 3D Printing* (John Wiley, 2013), p. 12.

165 <http://www.worldipreview.com/news/pok-mon-targets-3d-printed-design-citing-copyright-infringement-7067>

166 *Bezpečnostní Softwarová Asociace – Svaz Softwarové Ochrany v. Ministerstvo Kultury* (C-393/09) [2011] ECDR 3; *SAS Institute Inc., v. World Programming Ltd.*, (C-406/10) [2012] 3 CMLR 4 and their application in UK court in *SAS Institute Inc., v. World Programming Ltd.*, (C-406/10) [2012] 3 CMLR 4, para. 39. See also, Mendis D., Secchi D., *A Legal and Empirical Study of 3D Printing Online Platforms and an Analysis of User Behaviour* (London: UK Intellectual Property Office; 2015), pp. 7-9.

167 *Infopaq International A/S v. Danske Dagblades Forening* Case C-5/08 [2010] FSR 20. See also, Mendis D., Secchi D., *A Legal and Empirical Study of 3D Printing Online Platforms and an Analysis of User Behaviour* (London: UK Intellectual Property Office; 2015), pp. 12-15.

## Customised Goods and 3D Printing

The ability to customise physical objects is one of the many advantages of 3D printing<sup>168</sup>. The widespread use of web-based software tools, as mentioned above, has meant that users have the opportunity to modify/customise products challenging IP issues such as ‘authorship’ and ‘ownership’. This is particularly relevant to the customisation of jewellery, accessories, headwear and shoes, for example, which in turn has opened up the marketplace for mass-customisation<sup>169</sup>. Whilst the concept of mass-customisation appears attractive providing freedom of design to consumers, from the point of view of ‘authorship’ and ‘ownership’ it is clear that designers are keen to prove themselves as the original creator, even though the consumer may have modified it<sup>170</sup>. Further issues arise in relation to the authenticity and the unique nature (personal design) of the product. In responding to these issues, it may be debated whether AM-specific Technological Protection Measures (TPM) is the way forward.

## Conclusion

In looking to the future, the question that needs answering is whether 3D printing poses an immediate threat to IP laws. A Commissioned Study for the UK Intellectual Property Office (UKIPO) concluded that the immediate risks are minimal – at least for the next decade – and as such there is no urgency to legislate on 3D printing at present<sup>171</sup>. With that said, the research findings indicate that interest and activity is growing exponentially every year<sup>172</sup> with IP laws continually being challenged. As such and in learning lessons from the past, it will be prudent to take steps to cultivate a climate better suited to tackle impending IP issues more successfully and in a manner, which takes into account the interests of all stakeholders.

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168 For advantages and disadvantages of 3D printing, see also, Lipson H., and Kurman M., *Fabricated: The New World of 3D Printing* (John Wiley, 2013), pp. 20-24.

169 Examples of companies providing customised 3D printed jewellery, accessories and shoes include Nervous System, Jweel, Continuum Fashion, Freedom of Creation, Freakin’ Sweet Apps, Mymo and Electrobloom amongst others. See also, Reeves P., & Mendis D., *The Current Status and Impact of 3D Printing Within the Industrial Sector: An Analysis of Six Case Studies* (London: UK Intellectual Property Office; 2015), p. 40.

170 *Ibid.*, at pp. 41-42.

171 Mendis D., Secchi D., & Reeves P., *A Legal and Empirical Study into the Intellectual Property Implications of 3D Printing* (Executive Summary) (London: UK Intellectual Property Office; 2015).

172 *Ibid.* See also, Lipson H., & Kurman M., *Fabricated: The New World of 3D Printing* (Indiana: John Wiley & Sons, Inc.; 2013); Hoskins S., *3D Printing for Artists, Designers and Makers* (London: Bloomsbury; 2013); Anderson C., *Makers: The New Industrial Revolution* (New York, London: Random House; 2012).