



23.11.2017

WORKING DOCUMENT

on three-dimensional printing, a challenge in the fields of intellectual property rights and civil liability

Committee on Legal Affairs

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Introduction

On an experimental level, three-dimensional printing (or ‘3D printing’) dates back to the 1960s.

Initially developed in the United States, 3D-printing technology started to break through into industry in the early 1980s.

Not long after the technology had been developed, 3D printers began to hit the market, with companies offering both digital models and 3D printing services.

3D printing is, in fact, a general term covering several types of technology for manufacturing physical objects based on a digital file and using a 3D printer. They were initially designed to make prototypes and this purpose still accounts for the largest share of the 3D technology market.

The technology became accessible to the general public with the introduction of 3D printers for individuals, but that market is still marginal and is expected to remain so in the medium term, given the limited materials available to consumers.

Today 99% of items are printed with the same plastic, resin and metal materials. One of the main challenges for the 3D sector will be to combine several materials.

On the other hand, the development of remote printing services, sometimes coupled with a platform for sharing 3D files online, means that anyone can print an object in 3D at a far higher quality than could be achieved with a low-end machine. The use of 3D printers in educational institutions and collaborative work spaces (so-called ‘fablabs’) also promotes universal access to the technology in question. Most of today’s high-tech industries use this technology because it has a positive impact on innovation and often on the environment too.

Expectations are high in the medical sector, where this technology could have applications in the manufacture of prosthetics, dental implants, human skin or indeed organs, including kidneys, and so on. And also in the aerospace sector, where lighter components will allow savings to be made from lower fuel consumption. Airbus currently has an aeroplane at the experimentation stage which has no fewer than a thousand 3D-printed components. The development of this technology is also of great interest to industries producing automotive spares, toys and household electrical appliances. Lastly, 3D printers and 3D scanners are increasingly being used in museums for restoring historical objects and for research, particularly in archaeology.

The EU has made 3D printing one of the priority areas of technology. The Commission referred to it, in its recent reflection paper on harnessing globalisation (COM(2017)240), as one of the main factors in bringing about industrial transformation.

Examples of European initiatives include the Vanguard project, which brings together some 30 European regions to cooperate on investment in innovation, for example by designing projects, in collaboration with industry, which use 3D-printing technologies to create much lighter and more flexible metal parts.

In an opinion on 3D printing, the European Economic and Social Committee said that ‘the digital revolution, together with this fabrication revolution, will enable Europe to re-shore production from lower wage regions in order to spur on innovation and create sustainable growth at home’ (2015/C 332/05).

But while 3D-printing technology is often presented as leading to a transformation in manufacturing industry, its impact on the production of goods is, for the time being, still limited. A report by the Office for Science and Technology of the French Consulate-General in San Francisco points out that *‘despite the potential, the promise and the buzz around 3D printing, the sector is developing at a relatively modest pace: traditional production methods will retain a majority of the market share in production in the short and medium term, while it is in areas such as prototyping, low-volume production and customised products that the difference will first be seen.’*

By making on-demand production possible, 3D printing could offer many advantages to businesses: easing the strain on their logistical chains, reducing storage and transport operations, lessening the environmental impact and cutting spending on goods insurance.

A reduction in the number of interventions would give companies the opportunity to repatriate offshore production activities.

We are all aware that this production would mainly be done by machines, and that could be a concern. But it could also have a positive impact in terms of creating new jobs that are physically less demanding and dangerous (maintenance technicians, engineers, designers, etc.) and also reduce production costs (for low volumes).

3D printing allows local resources and production operations to be used more effectively, which reduces transport costs and gas emissions.

Relocating production could help maintain its added value at local level, and by reducing the movement of goods 3D printing would reduce both transport costs and carbon emissions.

Aim and scope of the report

3D printing may raise specific legal, ethical, health and even safety issues.

These considerations are particularly relevant in the medical field, where many issues relating to organ reproduction already pose real ethical concerns, such as equality of access to healthcare and health issues.

Safety issues are also paramount, particularly in the production of automotive spare parts, aeronautical parts and firearms, for example. 3D printing also carries the risk of facilitating counterfeiting, not only in terms of individuals who might take advantage of exceptions for private copying, but also organised networks profiting from the sale of counterfeit goods. To prevent counterfeiting it is essential, therefore, to develop lawful 3D printing services, so that individuals who want to make a print of a work can do so without breaking the law, and ensuring that the author is fairly remunerated. To that end, it may be useful for rights management companies to work with file-sharing platforms and to ensure that conditions for

using the files protect the rights and interests of authors.

Your rapporteur suggests that the report should focus on horizontal issues relating to intellectual property and civil liability, in line with the remit of the Legal Affairs Committee.

3D printing raises issues concerning intellectual property and civil liability for two main reasons:

- as regards intellectual property, in view of the possibility of customising an object;
- as regards civil liability, in view of how the production chain operates.

Since the object being made has been digitally designed, the possibilities for modifying and applying it are endless. The fact that this new technology combines digital and physical aspects also changes the way the production chain operates: the online availability of files heralds the advent of public participatory innovation, since open-source files can be freely modified, improved and customised.

Intellectual property

With regard to intellectual property, some useful distinctions can be made: for instance, between home printing for private use and printing for commercial use, and between B2B services and B2C services.

A report drawn up by a review commission on 3D printing and copyright for France's Higher Council for Literary and Artistic Property found that 'the democratisation of 3D printing does not appear, to date, to be causing a huge problem with copyright infringement, which is the subject of this report. The great majority of fablab clients, such as online printing services, are professionals, especially designers, who use this technology to produce limited-edition objects as part of their creative activities. The main risk of counterfeiting is with works of art.'

That report found that 'in the short and medium term the main challenge is to increase the involvement of professional copyright intermediaries. First of all this involves online 3D file-sharing platforms which claim to benefit from hosting status under [Directive 2000/31/EC] on electronic commerce, which limits their liability even though, at least when they play an active role that gives them knowledge or control over the stored files, they can no longer benefit from that limitation. As the boundary is uncertain, the law in this area needs to be clarified.'

It also involves 3D scanning services and software as well as 3D printing providers, who should systematically draw attention to the need to respect intellectual property and include in created 3D files, as we saw previously, elements which allow them to be traced.

In conclusion, the legal experts consider that 3D printing has not had a dramatic impact on copyright. A 3D file can be considered a work and will be protected as such. Nevertheless, in the short and medium term the main challenge is to involve professional copyright intermediaries more closely. A future revision of Directive 2004/48/EC on the enforcement of intellectual property rights, which the Commission has announced for the current term, will be particularly important in this respect, and possibly accompanied by soft law action to provide information on the subject.

Civil liability

These distinctions are also relevant to any consideration of the civil liability aspects. For example, the question of liability for goods produced and for damage resulting from a defective file could, as far as consumers are concerned, be resolved with reference to Articles 10 and 14 of the Commission proposal ‘on certain aspects of contracts for the supply of digital content’. On the other hand, Directive 85/374/EEC on liability for defective products covers all contracts. It should be noted that it is developments in connection with 3D printing that have led the Commission to undertake a revision of this Directive to check whether it still meets current needs. Its conclusions are expected towards the end of 2017.

A specific function of liability law is to support the insurance market – if liability in a given area is unclear, insurance tends to be expensive or even unavailable, which affects the availability of risk capital.

General liability rules also apply to 3D printing. One argument for specific treatment in relation to damage caused by an object created using 3D printing technology is that it can be difficult for the victim to identify the person responsible. Such rules can be applied to identify the manufacturer of the 3D printer, the producer of the software running the 3D printer or the person creating the object by letting the software instruct the 3D printer.

In general, civil liability is a matter which is not harmonised but subject to national legislation. EU legislation is limited to more specific rules on issues such as civil liability for defective products. As far as this liability is concerned, the question of whether 3D printer manufacturers should have greater liability than manufacturers of other tools or machines that can be used to create objects should be examined.

The specific use of 3D printing in health care, for example, would normally be covered by the contractual relations of the parties, and the end-users – patients – are covered by medical insurance schemes.

The way ahead

Other questions could be raised, such as whether or not to include elements in 3D files to make them traceable, or to ensure that printed objects are traceable by embedding a marker (DNA). It goes without saying that a cautious approach is required in the 3D-printing sector. It will take many years and a good deal of expertise before high-quality products can be made which do not pose a risk to users or consumers. Anticipating problems relating to accident liability or intellectual property infringement will require the adoption of new legislation at EU level or the tailoring of existing laws to the specific case of 3D printing.

There are a number of possible solutions already available to address the issues of intellectual property and civil liability: creating a global database of printable objects to control reproductions of copyright-protected 3D objects; introducing a legal limit on the number of private copies of 3D objects to prevent illegal reproductions; or imposing a tax on 3D printing to compensate IPR holders for the loss suffered as a result of private copies being made of objects in 3D. None is wholly satisfactory on its own.

In any case, the legislative response should avoid duplicating rules and should take into account projects that are already under way. Innovation needs to be accompanied by law, without the law acting as a brake or a constraint.