Today, 3D printing is one of the technologies that is rapidly gaining momentum and being applied in various fields.

The possibility of printing physical objects based on their digital models appeared back in the 1980s\(^1\), and it was precisely then that the first industrial devices for three-dimensional printing appeared. Over the past three decades, 3D printing has become a unique tool that makes it possible to create the most varied objects: from primitive plastic figures to buildings and human organs. As the printing technologies and range of materials used become more complex, 3D printers are becoming more and more accessible.

These two facts determine the growing interest in the legal aspects of 3D printing both on the part of business and on the part of average consumers.

## The 3D model as intellectual property

In one way or another, digital models of manufactured products have been used in industrial processes since the 1960s\(^2\). However, with the spread of 3D printing technologies that enable even the ordinary user to make products at home, the value and importance of 3D models as independent items of civil commerce increase. Accordingly, the issue of their legal protection is also becoming more relevant.

What is the legal status of a 3D model under current Russian laws? There may be several answers to this question depending on the following key circumstances:

- Whether the 3D model was created by technical or creative work and
- Whether existing items of intellectual property were used in creating it.

Let’s look at the main options:

### 1. The model was created by technical means using existing items of intellectual property

Various items of intellectual property may be used in creating a model. A quite simple situation is when a 3D model is obtained as a result of scanning or converting (processing a set of two-dimensional images) a copyrighted item. In this case the model obtained through scanning, for example, a designer vase, will be protected by copyright as a digital copy of the object used for scanning.

As for 3D models of objects implementing patented solutions, the issue of whether patent protection extends to these models is unclear. On the one hand, Chapter 72 of the RF Civil Code talks about ways of using patented solutions in the context of implementing them in a product or article, but 3D models are not products or articles. On the other hand, a 3D model which actually contains information about a patented solution is precisely what makes it possible
for anyone to very easily manufacture a product or article in the development of 3D printing. So, the freeware distribution of such models, including via the Internet, will clearly be contrary to patent holders' interests.

It is worth noting that approaches to the legal protection of 3D models in which items of intellectual property are used will in many ways be similar no matter what method of creating the model is used. However, if the model is obtained as a result of creative work, then additional aspects arise, for example, the need for the author of the model to obtain permission to transform the original work from its author (rights holder).

2. The model was created by creative work without using items of intellectual property

For example, an original model was developed in a graphics editor and is a phantom of the designer's imagination. In this instance the model will be protected by copyright as a separate work of graphic art or design. Generally, all rights to the model will belong to the author who created it.

3. The model was created by technical means without using items of intellectual property

Illustrative in this instance are models obtained in scanning an ordinary hammer or converting a non-copyrighted image. It is obvious that such models are not protected as items of intellectual property. However, one may imagine more challenging situations.

For example, the designer Ulrich Schwanitz created a 3D model of the famous Penrose triangle and at first sold it and then posted it for free download on the Shapeways site. When he later saw his model on the Thingiverse site, Schwanitz sent that website a request to cease and desist copyright infringement. The website voluntarily deleted the model. However, if the case had gone to a court, the court would likely have ruled not in Schwanitz' favor. In the instance involving Schwanitz considered here, the practicality of legally protecting a 3D model is quite controversial because there was an intellectual but probably a non-creative contribution to developing the model.

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Source: Wikipedia online encyclopedia

Nevertheless, in certain instances creating 3D models may require considerable cost in terms of time, financial and organizational expenses, and complex intellectual calculations. Let’s take as an example the situation where a 3D model is created when scanning an object (or a group of objects) with a complicated configuration and texture using an expensive 3D scanner. The nonvisual flip side of the 3D model obtained in this example is all of the information about the relative positioning of thousands of dots in space. It would seem that the creator of such a model will be interested in exercising not only actual but also legal control over the use of that information. However, the possibilities of legally protecting the information as such are limited in current Russian law. At the same time, given the circumstances described above, it is possible to apply the provisions on the related right of the database developer.

It is worth noting separately that 3D models as such may be registered as industrial designs or three-dimensional...
Important issues of protecting third-party intellectual rights

If third-party intellectual property was used in creating a 3D model, then both the use and the distribution of the 3D models themselves and the very printing of objects on a 3D printer in most cases will infringe third-party rights. Let’s take a look at some important issues.

One of the instances of restricting the legal monopoly of rights holders is the free-of-charge use allowed by law without the rights holder’s consent of copyrighted and patented items for personal use (for personal needs). As 3D printing opens up new opportunities for each consumer to make products on their own, this restriction cannot but reflect on rights holders’ income. The content and interpretation of provisions on personal use are likely to change over time.

In a situation where a 3D model is the starting point on the consumer’s path to printing the desired object, issues of the protection of rights on the Internet, especially with the development of 3D model distribution platforms are becoming even more important. The well-known Antipiracy Law and the respective Moscow City Court procedures operate with respect to an infringement of copyright. With respect to other infringements, the general provisions of Article 1252(1)(2) of the RF Civil Code on the protection of rights by making demands for the termination of activities infringing the right or creating a threat of infringement apply. In addition, the practice of applying Article 1253.1 of the RF Civil Code on the liability of information intermediaries will be further developed.

As it was mentioned earlier, in case of copying a trademark or a copyright object in a 3D model, the legal issues are mainly the same as the ones existing today. For example, in respect of illegal distribution of music or counterfeited products infringing trademarks. The main issue here is how to effectively stop infringements on the Internet. There is no novelty in this. However, use of patented objects in a 3D models and further distribution of such 3D models may become a new legal issue. Normally, use and copying of information about patented objects is legal, it is only prohibited to create items (physical objects) with use of patented objects. As a result, it is a question whether distribution on the Internet of 3D models containing patents of third parties is an infringement as no physical object is created. It is interesting to mention here a case which was decided in the USA, Align Technology vs ClearCorrect Pakistan, where the courts decided it was legal to share 3D models of aligners containing patented technologies through the Internet and produce physical copies of them abroad.

Safety issues

The technical capabilities of 3D printers have reached such a level that they make it possible to print coins and weapons. It is understandable that mass distribution of complicated printers is not a matter for the nearest future. But there is no doubt that sooner or later the production that today is possible only in industrial conditions will partly shift to the homes of ordinary consumers, and the production-consumption supply chain will be considerably transformed. The current laws on product safety are obviously not prepared for such changes. The rules on technical regulations are intended for industrial production by business professionals. However, in conditions when a consumer gets the opportunity to manufacture products on their own using a model, it is hardly possible to apply those rules directly or even by analogy. At the same time, the quality requirements to 3D models themselves, issues of standardizing materials and processes in production using 3D printing technologies take on special significance.

However, the main question is how to ensure that objects printed on a printer are safe, reduce the risk of prohibited or
restricted objects from being printed and, at the same time, do not inhibit the development and spread of 3D printing technology.

On 16 December 2016 Dentons presented an overview of the legal problems related to the development of 3D printing at a roundtable organized by the St. Petersburg International Business Association (SPIBA).


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