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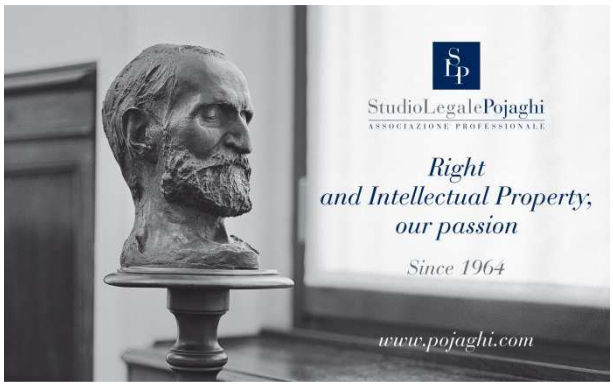
Saturday, October 29, 2016 - 3D Printing – The Shape of Things to Come

From 3D to 2D and back



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Introduction

According to **Jeremy Rifkin**,[1] the Third Industrial Revolution (TIR) will disseminate 3D printing[2] on a large scale, enabling people to produce their own durable goods at home, office, or nearby on demand locations. This will trigger massive energy saving and reduction in materials used, and result in a qualitative increase in energy efficiency beyond anything imaginable in the First and Second Industrial Revolutions (hence, the Third Industrial Revolution), leading to tumbling costs of marketing and logistics.

In practical terms 3D printers run off a three dimensional product by using different techniques, from the original Fused Deposition Modeling (FDM), now in public domain (and therefore available to all at no costs, which explains the sudden availability at affordable costs of the "entry line" of 3D printers for home or office use), to Color Jet Printing (CJP), Multi Jet Printing (MJP), Stereolithography, Selective Laser Sintering (SLS), Direct Metal Printing (DMP) and, in a prospective future, Bio Printing (BP).

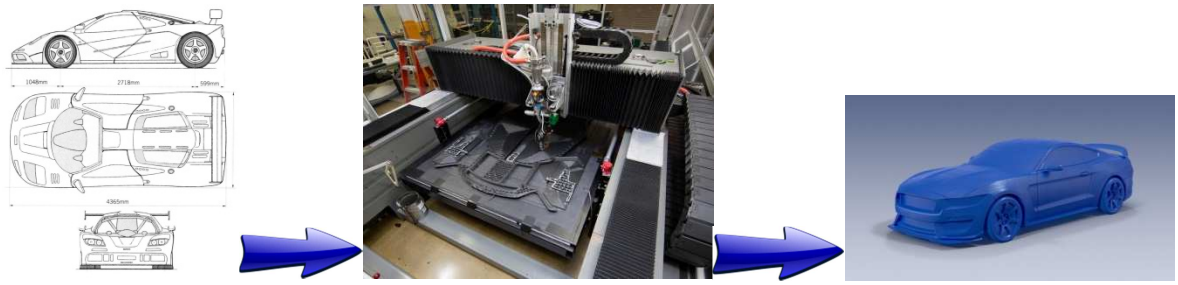
[1] Jeremy Rifkin (born January 26, 1945) defines himself as an "economic and social theorist, writer, public speaker, political advisor, and activist". Rifkin is president of the Foundation on Economic Trends and author of 19 books about the impact of scientific and technological changes on the economy, the workforce, society, and the environment. His most recent books include The Zero Marginal Cost Society (2014), The Third Industrial Revolution (2011), The Empathic Civilization (2010), The European Dream (2004), The Hydrogen Economy (2002), The Age of Access (2000), The Biotech Century (1998), and The End of Work (1995) (source: Wikipedia)

[2] Or "additive manufacturing", as opposed to "subtractive manufacturing", involving cutting down and pairing off materials and then attaching them together, therefore requiring as much as 10 times the raw material expended by 3D printers to build the same object.

The transition between 3D products and 2D drawings

And how does the 3D printing machine know what to print, and how to do it ? By large simplification, we can say that the printing (or rather, building) instructions lay in the object's design ("**a plan or drawing produced to show the look and function or workings of an object**"), or Computer Aided Design (**CAD**).

So for example:



DRAWING **PRINTER** **PRODUCT**

or:

PRODUCT **DRAWING** **PRINTER** **PRODUCT COPY**

So, what are the rights (or the exceptions) involved in the creation of a 3D object from a 2D design, or in the creation of a 2D design of a 3D (existing) object in order to replicate it in multiple exemplars ?

Leaving aside Trademarks and Patents, unfair competition, know-how protection and other institutes of the law for the protection of economic activities, I shall look here into purely copyright and design protection.

Copyright and Design protection in Italy: the basic principles

The principles of **copyright protection** are known: the existence and complete expression (ideas are not eligible for copyright protection) of a "work" (under Italian law, work of the intellect, having creative character) belonging to one of the various genres contemplated (by way of example) by article 1 of the Italian Copyright Law[3], grants the author the exclusive right to exercise – or not exercise – the rights of exploitation of his work, as well as a number of – moral - rights for the defense of his personality), for the sole fact of its creation (no registrations formalities required, beside the mere copyright reservation under art. 3 of the Berne Convention) and for the whole life of the author, plus 70 years after his death.

[3] Law of April 22, 1941, n. 633

On the other hand, following the implementation of the EC Directive 1998/71 on the legal **protection of designs** (Community Design Directive), Articles 31 to 44 of the Italian Legislative Decree n. 30 of2005 – Code of Industrial Property grant protection to "the appearance of the whole **product** or of a part thereof as resulting, in particular, from the features of the lines, of the contours, of the colours, of the shape, of the texture or of the materials of the product itself or of its ornamentation (…) provided that they are **new** (or, never been divulged[4] before**)** and have **individual character** (meaning, under article 33, that the **overall impression that it produces on the informed user** differs from the overall impression produced on such a user by any design or model which has been divulged before)".

Contrary to the copyright regime, the registration of the design (art. 37) or model **lasts five years** from the date of filing of the application, and the right-holder may obtain the prorogation of such duration for one or more periods of five years, **up to a maximum of twenty-five years** from the date of the initial filing.

The protection of design under copyright law

The relationship between copyright and design protection in Italy has, for several decades, been problematic.

In the original wording of the Italian Copyright Law, (in addition to other more traditional genres of work) protection was given to "works of sculpture, painting, drawing, engraving and similar graphic arts, including scenic art, even when such works are **applied to an industrial product** if their **artistic value is (was) distinct from the industrial character of the product** with which they are (were) associated" (art. 2, n. 4).

Protection of design under copyright law was therefore dependent from the condition of "**separability**" ("*scindibilità*") of the artistic value of the work from its industrial character.

If artistic value were to be found, protection lasted for the whole life of the designer and 50 years after his death.

Next to it, Article 5 of the Royal Decree n. 1411 of August 25, 1940, granted protection (in the form of a patent) to "**new** (ornamental) **models or designs which are (were) capable of conferring to certain industrial products a special ornamental character** by virtue of shape or by a particular combination of lines of colours or of other features."

But, when implementing the Design Directive, the Italian Legislative Decree n. 95 of February 2, 2001 (art. 22), simplified the protection of designs under the Italian Copyright Law by repealing the requirement of separability of the artistic value of the product from is industrial character (n. 4 of art. 2 now simply reads "works of sculpture, painting, drawing, engraving and similar graphic arts, including scenic art"), and introducing a new n. 10 in the list of exemplification of protected works, which specifically contemplates now "**industrial design works**", provided however that they must have inherent "**creative character and artistic value**" in order to be protected by copyright (by then, for the life of the author plus **70 years after his death**).

The new provision did not last long, as only a couple of months later (with Legislative Decree n. 164 of April 12, 2001) it was amended with a transitory provision (**art. 25 *bis***), excluding from

[4] Definition under article 34

the new protection regime granted by art. 22, "for a period of **ten years from April 19, 2001**", products that, before such 2001 deadline, were manufactured, offered or commercialized according to designs and models formerly protected by the (1940 Decree) patent and had fallen into the public domain.

The transitory provision was then incorporated under Article 239 of the Industrial Property Code (Legislative Decree n. 30 of February 10, 2005) which also (re)stated (Article 44) the protection of design under copyright law, but only for the **shorter term of 25 years after the death of the author**.

Not surprisingly, an infringement procedure (4088/05) was initiated against Italy, objecting that Italy had violated the Copyright Term Directive (93/98/EEC, now 2006/116/EC) with reference to both the *post mortem* protection period and the transitory measure, prompting Italy to once again modifying (Law Decree n. 10 of February 15, 2007, converted into law with Law n. 46 of April 6, 2007) into **70 years after the death of the author** the term foreseen by art. 44 of the Industrial Property Code.

On that occasion, however, **art. 239 of the Code was also** modified in order **eliminate the 10 years *moratorium* period, but not the exemption of protection for designs that were fallen into public domain at the date of April 19, 2001, which were therefore, from there on,** excluded from copyright protection **at all.**

After the re-wording of the provision,[5] Article 239 was amended again in 2010,[6] and the moratorium restated, for the period of **five years** from April 19, 2001; which became **thirteen years** by the modification introduced by Article 22 *bis* of the Legislative Decree n. 216 of December 29, 2011.[7]

Nonetheless, on March, 2014, the European Commission issues a formal request to Italy, objecting the disparity of treatment between (the rights of right-holders on) designs made after the entry into force of the implementation instrument of the Design Directive (April 19, 2001), which enjoy the double regime protection under design **and** copyright (provided that they have creative and artistic value), and (the rights of right-holders on) designs pre-dating the implementation of the Design Directive, which **were excluded from copyright protection for a period of 13 years therefrom** and were therefore deprived, during that period, of the benefits of copyright protection.

Somehow (the expiry – in the meantime incurred - of the transitory exclusion of protection ?) the European Commission must have found satisfaction to its requests, as the infringement procedure was brought to closure with Decision of November 26, 2014 (infringement number 20134202), and the issue was never taken to the European Court of Justice.

The Flos/Semeraro case

Inevitably, the legislative incertitude sparked a number of litigation, the most famous of which was the Flos/Semeraro dispute.

[5] Article 19 of Law 99/2009

[6] Legislative Decree n. 131 of August 13, 2010

[7] Converted into law with Law n. 14/2012

In 2006 the Italian furniture producer Flos, who brought proceedings against Semeraro, another furniture producer, before the Court of Milan, complaining that Semeraro had imported from China and marketed in Italy a lamp called "Fluida", which, in its submission, imitated all the stylistic and aesthetic features of the "Arco" (arch) lamp, an industrial design in which Flos claimed to hold property rights[8].

The Arco lamp was created in 1962, entered the public domain before 19 April 2001 and was, the Court said, eligible for copyright protection.

Arco lamp

Diamonds are forver, 1971, Sean Connery, Henry Blofeld (and Arco lamp)

Market price in the range of €2.000,00 ($ 3.000,00)

Semeraro lamp

The case was then referred to the European Court of Justice, asked to render its interpretation of Articles 17[9] and 19[10] of the Design Directive. In doing so, the EUCJ made an interesting

[8] Described as "inspired by a streetlight, the Arco cleverly provides overhead lighting without requiring ceiling suspension, its polished shade extending nearly seven feet to accommodate a dining table or sofa beneath the light source. Aware that the 78-pound lamp would be difficult to move, the designers Achille and Pier Giacomo Castiglioni smartly placed a hole in the base to accommodate a broom handle. They also gave the Arco an adjustable arc and swiveling shade for precise lighting control. As groovy as it is elegant, the lamp's iconic status was sealed when it appeared on screen alongside Sean Connery in Diamonds Are Forever and in The Italian Job (apropos). The Arco is included in the permanent collection at MoMA."

[9] Relationship to copyright
A design protected by a design right registered in or in respect of a Member State in accordance with this Directive shall also be eligible for protection under the law of copyright of that State as from the date on which the design was

reference to Article 12(2) of Directive 98/71, concerning the carrying out of acts of exploitation of designs by third parties who first carried out such acts before the date of entry into force of the national provisions of implementation of the directive, which states the following: "2. Where, under the law of a Member State, acts referred to in paragraph 1 (the making, offering, putting on the market, importing, exporting or using of a product in which the design is incorporated or to which it is applied, or stocking such a product for those purposes, n.d.r.) could not be prevented before the date on which the provisions necessary to comply with this Directive entered into force, **the rights conferred by the design right may not be invoked to prevent continuation of such acts by any person who had begun such acts prior to that date**."

The point though, noted the Court, was that the provision of **Article 12(2) could not apply in relation to copyright protection**, even if it could be argued that the absence of a provision expressly referring to protection, for third parties, of acquired rights and legitimate expectations in relation to the revival of copyright protection provided for in Article 17 of Directive 98/71 should not preclude application of the principle that acquired rights must be respected or the principle of legitimate expectations, both of which are among the fundamental principles of European Union law.

In fact, the **EEC Directive 1993/98**, harmonizing the term of protection of copyright and certain related rights, **did contain a transitory provision** (Article 10(3)) according to which "This Directive shall be without prejudice to any acts of exploitation performed before the date referred to in Article 13 (1) (July 1, 1996, n.d.r.). Member States shall adopt the necessary provisions to protect in particular acquired rights of third parties"). Which Italy did with the provision of **Article 17, paragraph 4, of the Law n. 52 of February 6, 1996**, stating that "Acts and contracts made or executed before the entry into force of the present law are made safe and unprejudiced (…) as well as rights legally acquired and exercised by third parties as a consequence of them", consequently granting an exemption clause to (a) the distribution and reproduction of editions of works fallen into public domain (according to the earlier regime), with limitation to the **already adopted graphical composition and editorial shape** (including future updates), and only in favor of **those who had already started** such distribution and reproduction, and (b) the distribution of **phonograms** the rights of which had expired (according to the earlier regime), but only in favor of those that had reproduced and put into commerce such phonograms before the entry into force of the new legislation, and only for the period of **three months** thereafter. In other words, in much stringent terms than those provided for by the years long, unconditional, moratorium regime.

On the basis of such ground, the Court stated that:
"Article 17 of Directive 98/71/EC of the European Parliament and of the Council of 13 October 1998 on the legal protection of designs must be interpreted as **precluding legislation of a Member State which excludes from copyright protection** in that Member State designs which were protected by a design right registered in or in respect of a Member State and which

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created or fixed in any form. The extent to which, and the conditions under which, such a protection is conferred, including the level of originality required, shall be determined by each Member State.

[10] Implementation
1. Member States shall bring into force the laws, regulations or administrative provisions necessary to comply with this Directive not later than 28 October 2001.
When Member States adopt these provisions, they shall contain a reference to this Directive or shall be accompanied by such reference on the occasion of their official publication. The methods of making such reference shall be laid down by Member States.
2. Member States shall communicate to the Commission the provisions of national law which they adopt in the field governed by this Directive.

entered the public domain before the date of entry into force of that legislation, **although they meet all the requirements to be eligible for copyright protection**.

Article 17 of Directive 98/71 must be interpreted as **precluding legislation of a Member State which – either for a substantial period of 10 years or completely – excludes from copyright protection** designs which, although they meet all the requirements to be eligible for copyright protection, entered the public domain before the date of entry into force of that legislation, that being the case with regard to any third party who has manufactured or marketed products based on such designs in that State – **irrespective of the date on which those acts were performed**."

The private copy exception

A product of design is therefore protected, in Italy:

if it has inherent **creative character and artistic value**, by **copyright law**, **with no formality required**, for the **whole life of the author and 70 years after his death**.	If it has **individual character**[11], by the **design regulation**, **subject to registration**, for **five years** from the date of filing, renewable **up to a maximum of twenty-five years** from the date of original filing.

With the (major) difference that, according to the design regulation (art. 42) the rights conferred by the registration of the design (or model) do not extend to(a) **acts done privately and for non-commercial purposes**, (b) acts done for experimental purposes and (c) acts of reproduction necessary for **citations or for teaching purposes**, provided that such acts are compatible with **fair trade practice** and do not **unduly prejudice** the normal exploitation of the design or model, and that the source is **mentioned**.[12]

No such exceptions is foreseen for the design protected by copyright law.

Then again, in Italy like in other European Countries a compensatory scheme is already in place to mitigate the damages provoked by **private copying** to the right-owners on phonograms and videograms, when digital technology made it possible to evolve from the earlier analogue copies (often of a lesser quality and therefore incapable, by definition, to compete with the original) to a virtually limitless series of "clones" of the original material reproduced.

In Italy, the law dates back to 1992[13], and was recently incorporated into the new Articles 71-sexies and following of the Italian copyright law.[14] It covers reproductions (of phonograms and videograms) made by **a natural person for private use, nonprofit making and for purposes**

[11] or, that the overall impression that it produces on the informed user differs from the overall impression produced on such a user by any design or model which has been divulged before.

[12] Plus, but not relevant for the purpose of our discussion:
2. The exclusive rights conferred by the registration of a design or model are not exercisable in respect of:
(a) the furniture and installations of ships and aircrafts registered in another Country that enter temporarily the territory of the State;
(b) the importation in the State of spare parts and accessories destined to the repairing of the means of transportation referred to in letter a);
(c) the execution of repairs on such craft.

[13] Law n. 93 of February 5, 1992

[14] Law n. 633 of April 22, 1941

that are neither directly nor indirectly commercial. Remuneration is levied at source by the Italian copyright collecting Society (SIAE), from producers and importers of carriers and devices that enable audio and video recordings.

SIAE is responsible for distribution to rights holders and does that by distributing directly to individual rights holders (authors) and through organizations of rights holders, according to the following scheme:
- phonograms: 50% to authors; 50% to phonographic producers and performers (half to be paid to performers).
- videograms: 30% to the authors; 70% in three equal parts to the original producers of audio-visual works, to the producers of videograms and to the performing artists thereof. 50% of the video distribution scheme assigned to performing artists is dedicated to study and research activities as well as to the promotion, training and professional support for artists and performers.

Remuneration for private copying is set by decree of the Minister of Culture and the National Heritage (subject to a three yearly update), the last of which was adopted, amongst vivid discussions, on June 20, 2014.

Conclusion

We can therefore conclude that:

- a design object, created or duplicated ("additively manufactured") by 3D printing can be protected by copyright (if "creative") or design law (if "new");
- a tridimensional object that is not a design can be protected by copyright(if "creative"), if pertaining to other copyright protected categories: sculptures, architectural works, etc.;
- a bi-dimensional reproduction of a tridimensional object might be subject to copyright protection (painting, drawing, ect.);
- copyright protection lasts for the life of the author plus 70 years;
- design protection lasts 25 years from the last registration;
- private copy exception applies to copyright, with compensation for the author or right-owner;
- private, non-commercial purpose exception applies to design, with no compensation for the author or right-owner.