

How will Technology affect IPRs? – 3D Printing

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New technologies seem to spring up all around us.

I think we underestimate how they will affect the law, and more particularly, Intellectual Property Rights, and how this, in turn impacts business models around innovation.

Look, for example, at 3D-printing.

What is 3D-printing? It is a process of manufacturing real objects, by using a 3D-printer. The 3D-printer “prints” (builds) materials like plastics, metals, ceramics, but even organic materials like food, or biomaterials like cartilage. How? By spraying very small layers on top of each other, typically with a kind of glue or by melting, e.g. with a laser.

3D-printing is today where personal computing was in the 70s. Hobbyists are doing it in their garage, but it's not mainstream yet. However, it will become mainstream soon. The cheapest 3D-printers start at around \$1,000, and can sit on your desk. They even sometimes look really cool. Printer materials are cheap, plentiful and often recyclable. Moreover, 3D-printing produces no waste, and consumes very little energy. Imagine printing your own sunglasses, according to your own design, fitting you absolutely perfectly, for a mere \$20.

This new technique will not only affect our society in many different ways, it will also have a profound, maybe even shattering effect on IPRs and their role in business models. I will focus on those effects only – you could write books on the potential effects on the future of manufacturing, trade streams, urbanization, etc.

For IPRs, the most obvious effects, I think, will be at two levels.

The first is design rights. Currently, industrial manufacturing is based on mass production of generic designs. Those designs can be protected through registration. Think of the specific shape of the Coca-Cola bottle.

However, 3D-printing will revolutionize end-product design, by handing over control of the design to the user, who will also be the manufacturer. You, anybody, will be able to design their own product (the pair of sunglasses mentioned, but also shoes, jewelry, anything really), and print it immediately.

You will of course use digital designs, produced by 3D design (CAD) software. The simplest of these is Google's Sketchup, but this is an area of software in which we can expect a lot more development, leading to better user interfaces, easier use, more intuitive commands, etc.

Those designs will, originally, come at a cost. However, given that the cost of reproduction of such a software generated design file is zero, they will quickly become freely available. Moreover, open source and creative commons will start to apply, forcing these designs effectively into the public domain.

In practice, this means that the protection of a registered “design” will become as impossible to enforce as the protection of a copyright on music today. Does that mean the end of design and designers? Not necessarily, but they will have to adapt to a different business model. Their added value will become much more personal to the end-user, rather than paid by the industrial manufacturer.

The second area of IPRs that will be affected is, of course, patents.

Today, about 98% of patents are generally considered to have no value in the marketplace.

If the reproduction of physical goods becomes almost as cheap as the reproduction of software, the possibility exists that of the remaining 2%, a large part will also quickly lose value.

The main reason is that it is much easier to enforce a patent against a competitor than it is to enforce it against a crowd. It’s just not cost-effective.

The second reason is open source hardware. As more and more technology is pushed into the public domain, prior art will become a real obstacle to obtaining patents.

The current patent system will therefore struggle to remain relevant in any domain where 3D-printing obtains a foothold. And that may be a lot more than you would think.

As a conclusion, I would like to come back to a central theme I’ve written about before. This is that “everything becomes software”. What I mean by that is that for most products, once Information Technology becomes a part of a product, the growth of value-add in IT typically goes in an almost exponential curve, whereas the growth of value-add of the hardware is more linear in nature.

Inevitably, the software takes over. That means that, in terms of business models, software companies have an edge. Think of how Apple and Google took over the mobile phone market, and how Nokia now believes Microsoft will save them. It’s all about software.

With 3D-printing, hardware effectively becomes software.

The curve of growth of innovation and creativity in hardware design and manufacturing will probably also be exponential. The sky is no longer the limit, it is becoming the starting point.