Machines Making Machines: 3D Printing - Did you know? (Part II)

In our first March newsletter, we looked at a glance at the 3D printing technology. ***3D Printing*** or ***Additive manufacturing*** (AM) is defined by the American Society for Testing and Materials as the "process of joining materials to make objects from 3D model data, usually layer upon layer, as opposed to subtractive manufacturing methodologies, such as traditional machining." Some advantages of the process include: short lead times, no tooling, high complexity, freedom of design, moving parts, customization, materials.[1] Consider also that an increasing number of ready-to-print designs are already available free on the web.

SOME DISADVANTAGES

- The technology is still young;
- For in-real-life printing, 3D models still require some engineering conceptual thinking;
- The surface of the printed material may require further treatment, as it may be rough;
- You have to make a choice regarding the right-for-you printing material, and most likely invest time and resources into it;
- Dimensioning of whole printed objects is limited, tends to be small at present;
- While open-source libraries are an advantage, the back side of the coin is copyrights;

THE POSSIBILITIES – FIREARMS?

Did you know that just the other day a nonprofit project for open-source firearms - Defense Distributed - obtained a **US federal license to sell 3D-printed guns**?[2] Late last year PC Magazine and Forbes ran stories on the controversial American project. Says its founder, 24-year-old Cody Wilson, "You can print a lethal device [in your own house]. It's kind of scary, but that's what we're aiming to show."

THE POSSIBILITIES – METAL PRINTING?

Currently it works through depositing into the container of the printer "a powder metal matrix that contains binders." Printing metal sounds incredible, but it is true. Reads extremetech.com, "After each layer is deposited, the binder is melted and the metal is temporarily held together until it is fused in a final bake in an oven. The part can be printed entirely in this way, or just a shell can be printed which can then be used to mold metals of a lower melting point."

THE POSSIBILITIES – FOOD?

Chocolate is totally printable. Nothing prevents you from mingling with it other ingredients. This, coupled with the unsurpassed ability of the technology to reproduce intricate detail, gives way to chance upon something that hasn't been tried yet. Check out this BBC video about making special moulds for chocolate.

These are just some of the unlimited opportunities unchecked by the prototyping technology of 3D Printing. The promise is that innovations are unveiling as fast as they did with the WWW. The horizon indeed is vast.

---

[1] *Rapid Product Development Organisation of South Africa*. What is additive manufacturing http://www.rapdasa.org/index.php/about-additive-manufacturing Retrieved on 18.03.13;
[2] *Mashable*. 3D-Printed Gun Maker http://mashable.com/2013/03/17/3d-printed-gun-license/ Retrieved on 18.03.13;