Opening up product design to the consumer through 3-D printing

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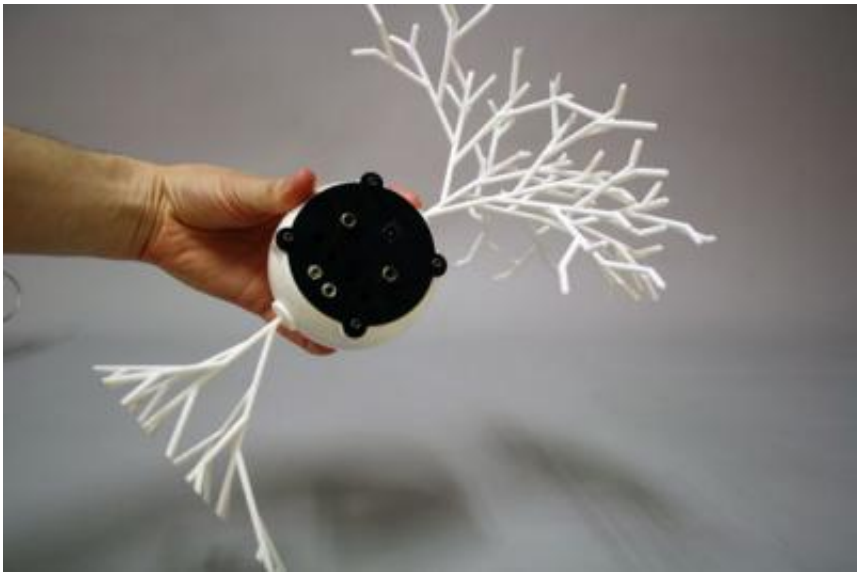

Speaker that grows in a piece of furniture, the shape is generated by an algorithm to suit one's physical space. Credit: Umeå University

Through the use of 3D printing, product designers can enable the consumer to design their own everyday products thereby creating more meaningful products for people and more value for companies. These are some of the conclusions Guido Hermans draws in his dissertation at Umeå University in Sweden.

"The two questions that I have focused on are: How will the roles of the professional designer and the layperson change when the latter engages

in the design of personal products? And, how can designers develop digital-physical toolkits for the layperson to collaboratively create value and meaning?" says Guido Hermans.

Within product design there has traditionally been a gap between production and consumption, with distinct roles for the professional designer, who engages in production, and the consumer, who engages in consumption. However, this clear distinction has been blurred recently and the consumer, or layperson, is no longer involved only in consumption, but also in production.

In his research, Guido Hermans has investigated a way to open up design to the consumer and how to give this group an active role in the design of everyday products.

"This role change implies a shift for the professional designer from knowing what a future user would like to have towards knowing what a layperson would like to design, which is for most designers an unfamiliar way of thinking," says Guido Hermans.

Framework for understanding lay design

The new form of lay design is enabled by two developments: On the one hand, the creation of variable designs by using computational design, and on the other hand, the fabrication of variable products with 3D printing.

"I specifically investigated how the layperson can be involved in design through the use of so-called digital-physical toolkits, software applications where one designs in a digital environment and which outputs a physical product", says Guido Hermans.

Guido Hermans has conducted a series of studies, both analytical and experimental. For the experiments he took a constructive design research

approach, which means that he engaged in the making of toolkit and product prototypes.

"The main contribution of this research is a framework of lay design that consists of a set of principles and guidelines that enables the professional designer to develop digital-physical toolkits that empower the layperson to engage in the design of everyday products," says Guido Hermans.

The implications of lay design concern the role of the professional designer, the way value is created, a shared accountability, and also the way designers are educated regarding the tool-sets, skill-sets, mindset, and knowledge.

"Lay design constitutes value created by both the professional and lay designer, thereby eliminating the separation of production and consumption," says Guido Hermans.

Guido Hermans has carried out his doctoral level studies at the Umeå Institute of Design, Umeå University.

Provided by Umea University