The Furniture Machine

Furniture since 1990

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Laser chair, designed by Ineke Hans, self-production, the Netherlands, 2002. Laser-cut MDF. Photo: courtesy of Ineke Hans.

put it into production in 2005.

These designers all used CNC cutting to create complex two-dimensional patterns, part of a decorative trend dominated (and largely instigated) by the work of Tord Boontje. Fellow Dutchman Jeroen Verhoeven, however, pushed the boundaries of CNC cutting to create the Cinderella table in 2005, as part of a project he called 'From Fantasy to Factory'. He designed it while still a student at the Design Academy in Eindhoven (where, incidentally, Tord Boontje had also studied), where he was taught by Hella Jongerius, Jurgen Bey and Dick van Hoff. On graduating in 2005 he set up his own studio in the same Rotterdam building as Richard Hutten. Verhoeven's aim was to rediscover craftsmanship within the industrial process of shaping wood using computerized machinery, and to achieve this he worked with a boatyard. His design morphed together on a computer the outline of a baroque table with that of a bombé commode. Then he divided the form into 57 slices, CNC-cut from both sides to create complex compound curves that were joined to form the complete table, made of 741 plywood layers. It was a virtuoso use of technology in the service of craftsmanship.[25] Computer-Aided Design and its corollary, Computer-Aided Manufacture (CAD-CAM), of which CNC milling is an example, have narrowed the gap between the designer's intention and the realization of the finished product, speeding the design to manufacture process. Many of the technical innovations and material experiments in this chapter have been in the cause of making cheaper, more efficient and more durable furniture. They are but the latest workings of an industrial system that relies on innovation to ensure competitiveness. Rapid prototyping, however, is a new manufacturing process that challenges the very nature of mass-production techniques, and the relationship between unique and serially produced objects.[26]

As its name suggests, rapid prototyping was developed as a tool for industrial designers and manufacturers to accurately and quickly model components in three dimensions, and in its infancy in the 1990s the technology was prohibitively expensive. Like CNC cutting, rapid prototyping is entirely dependent on the interface of a digital design and a tool. In this instance the computer-generated designs are 'sliced' virtually into layers as thin as 0.15mm. Several competing technologies exist to fabricate the objects and one of them, selective laser sintering (SLS), is often described as three-dimensional printing. As thin layers of polyamide powder are laid down on top of each other, computer-controlled laser beams scan the surface corresponding to the layers of the sliced design, and the lasers' heat causes the molecules of the powder to fuse. Over time the three-dimensional object is built up, fused layer by fused layer. Sintered objects have the character of bone and are generally stronger than those made by stereolithography. This process is similar, in that it is operated by computer-controlled lasers following the pattern of the sliced design, but here they scan the surface of a tank of liquid polymer, causing it to harden. As the object is constructed, it is lowered into the tank, so only the top edge is within reach of the laser. A frequently used analogy is that the objects are 'grown' in the rapid prototyping machines, which indeed is how it looks. But the organic metaphor only serves to conceal the utterly digital origins of the technique.

Despite the expense of doing so, both Ron Arad and Marcel Wanders have used