

Creative embrace of computer technology

The robot revolution

Three-dimensional printing makes bespoke jewellery more accessible and affordable, writes *Claire Adler*. But has it got heart?

During New York Fashion Week in February, Kimberly Ovitz, the womenswear designer, introduced jewellery inspired by natural defence, including five unique pieces that fit the body like armour.

She brought the nylon and stainless steel collection to life through on-demand 3D printing by New York-based Shapeways, selling her pieces the second they hit the runway and delivering to customers within two weeks, all without investing a penny in stock.

Thanks to technological strides in computer-aided manufacturing, jewellery designers are now able to release more unique designs more frequently – and they are precisely matching supply and demand in the process.

"With 3D printing, it doesn't matter how intricate a design is or how many variations you make, the cost of production is only determined by the material used," says Duann Scott, designer evangelist at Shapeways.

"This means a unique item costs the same price as a one-size-fits-all item.

"Because all items are 3D printed to order, supply exactly meets demand. Customisation is free, there is no inventory and no risk to innovate," says Mr Scott.

Computer-aided design and computer-aided manufacturing – design software called Cad/Cam – has existed in the jewellery industry for about 10 years. "Until a few years ago, Cad/Cam was almost considered a dirty word by many jewellers.

But as businesses have come to see the flexibility and efficiency it can bring, jewellers are increasingly exploiting the potential of the technology," says Jack Meyer, senior compu-

ter-aided design tutor at London's Holts Academy of Jewellery.

When designer Kate Jones recently created a Guatemalan Day of the Dead gold skeleton pendant for her Ursa Major collection for the online boutique Sancy & Regent, 3D modelling allowed her to replicate an original wooden skeleton on a smaller scale than previously possible.

"You can also create semi-hollow forms or pieces with interior lacelike or skeletal intricacies in large numbers – it's incredible," says Ms Jones. "With Shapeways you can order as many as needed and at a low cost. The possibilities are endless."

Computer-assisted manufacturing techniques are also gaining traction with designers because of another factor – speed.

"Computer-assisted manufacturing methods, including laser technology and 3D printing, are leading to faster production. Brands are under pressure to prepare new products for Fiera di Vicenza in January, then BaselWorld in the spring and other trade shows throughout the year. New technologies make this possible," says Gianluigi Barettoni, president of Afemo, the association of Italian Jewellery Machinery Manufacturers and Exporters, that is in partnership with Fiera di Vicenza's T-Gold jewellery technology exhibition at TecnoGold São Paulo in June, and other T-Gold shows in Mumbai, Dubai and Vicenza.

"Jewellery competes in the gifting marketplace with items such as mobiles, in a culture where the newest is the most desirable," he says.

A laser sintering machine introduced late

last year by Cookson Precious Metals with manufacturing specialists EOS, uses 18-carat gold powder in sealed compartments.

Jewellers and watchmakers can look on through a camera within the machine as their computer-aided design is created layer by razor-thin layer of gold and emerges as a solid three-dimensional object within hours.

Cookson has seen significant interest from big high street chains that are interested in offering more personalised jewellery and is looking to support universities interested in running courses on the new technology.

"We are seeing an emerging field of expertise called digital craftsmanship," says Mr Scott. "Three-dimensional modelling techniques require an understanding of material, process and digital tools all honed over time with a meticulous eye for detail in much the same way as traditional craftsmanship."

According to Mr Meyer, the cost of bespoke design is far cheaper than ever before.

"In the next decade, as rapid prototyping machines get cheaper and more flexible, we will see these machines in the home where parents can print out plastic children's toys or replacement parts for their dishwasher. As the minimum size of a cost-efficient production facility reduces, we will likely see

Made in the UK once again with frequency on British-designed jewellery," says Mr Meyer.

But in a culture and an industry driven by newness, do we risk losing a passion for hand-crafted objects and the workforce of craftspeople to make them?

"Three-dimensional printing has revolutionised the way unseen elements of 3D objects,





Digital craftsmanship: T-Gold exhibition showcases the latest in jewellery technology, which is being used by designers such as Kimberley Ovitz (left)

such as gears and hinges, are created in jewellery and watches, as well as in medicine, aviation and motoring," says Wendy Meakin, a senior lecturer in visual cultural studies at Central Saint Martin's for 15 years and a dealer in the upcoming series of Channel 4 show *Four Rooms*.

"Yet tailors, shoemakers, jewellers and watchmakers are the people who create the objects we most covet."

"As a society, we need to nurture

these individuals and understand the value of something 'human made'. Ultimately, how automated a world do we want to live in?"

Ms Meakin is not the only sceptic. "No machine has a heart or a mind," says jeweller Theo Fennell, an exhibitor at Masterpiece, this year's London show of international craftsmanship. "If there is to be real emotion in a piece, it needs to be hand-crafted."