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MakerBot's 2014 releases include the Replicator Mini (centre), which at £1,140 or $1,375 is much more accessible than the 5th Gen (left, £2,340/$2,899) or Z18 (right, £5,148/$6,499)

NEED TO KNOW

WHY DON'T DESIGNERS CARE ABOUT 3D PRINTING?

The potential of 3D printing for the creative industries is massive, but graphic designers are unusually slow on the uptake. Wolff Olins' **Franc Falco** explains why it's time to take advantage of the opportunities on offer

Picture this scenario. You've just returned home after a four-hour round trip and a meatball lunch with your flat-pack side table in the boot, and you have a few hours to construct said table before your dinner guests arrive. No problem, you're a whizz with an Allen key and screwdriver and even the most complex construction is simplicity personified thanks to the wordless, line-drawn instructions.

Three hours later, after some slight knuckle scraping, the last page of the build instructions is almost in sight. Except, irritatingly, the fourth little white plastic bracket thingy that should be in the bag along with the other three little white bracket things isn't there. An extensive search under the sofa, in pockets and an accusing eye at the dog only confirms the suspicion – the fourth bracket wasn't in the bag 'o' bits!

A glance at your watch only confirms the fact that even though the Swedish store is open until midnight, you just don't have time to negotiate the city ring road, stand in the 'missing bits' queue for 30 minutes, renegotiate the aforementioned ring road and complete the table build before your guests arrive. And so, the question is, as Keanu said to the baddie in classic film Speed, "What do you do? Well, what do you do?"

It's a no-brainer. This is 2016-ish, you only need to fire up your laptop or cornea-implanted interface, get onto the Swedish store's interweb site, navigate to the 'missing bits' link window, download the .stl file for the missing bracket and print it out on your MakerBot 7G desktop 3D printer. 30 minutes later the table is complete and the first dinner guests are knocking on your door.

That little near-future scenario, or something along those lines, is one I often recite to my designer buddies who ask me, "What's so special about 3D printing?" But it always feels slightly pointless to reference that story because, firstly, it has nothing to connect it with the industry I work in – graphic design – and secondly, it doesn't really explain 3D printing in today's world. The reality of 3D printing, especially at a consumer desktop level, is that it will have a massive amount more impact than just providing the ability to print missing brackets for flat-pack furniture (although that will definitely make the world a better place).

My introduction to the wonders of 3D printing came about a couple of years ago when the company I work for, Wolff Olins, invested in a desktop 3D printer. In the 35 years I've been involved in the graphic design industry I can honestly say that my introduction to this new-ish technology (it's actually 20 years old) and its potential, has been the most exciting discovery I have made since Photoshop 3 and transparent layers. It really changed my world and blew my mind.

My role as a creative specialist means I am often asked to create 'something' – usually a brand visualisation concept that will illustrate an idea to a client. Mostly Photoshop visualisation – a storefront, a concept applied to a piece of packaging, a product design, brand application and so on. Coupled with the amazing ability of 3D modelling and rendering software to complement Photoshop, that visualisation

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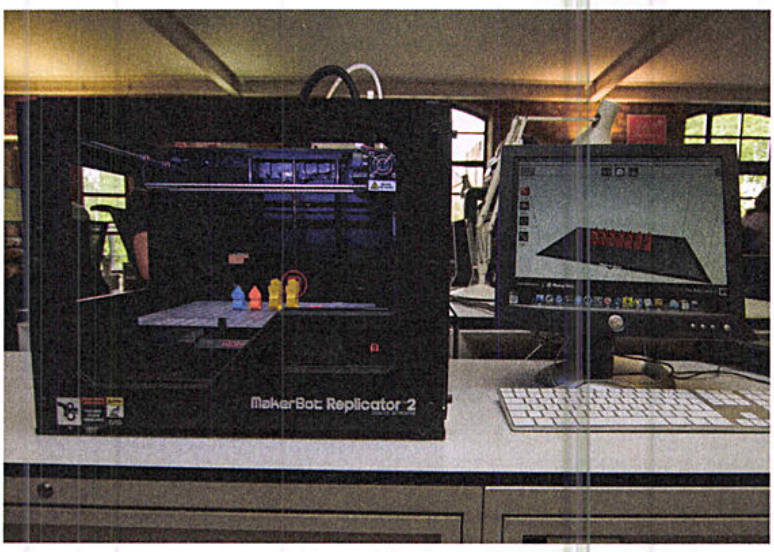
Wolff Olins' MakerBot Replicator 2, printing the studio's self-promo project Higby



can often look pretty real. However, no matter how good those images or animations appear on screen they are never really 'real' – they've always just been pixels stored on a hard drive.

But with the access to a 3D printer, I now have the ability to make those images really, really real. Tangible objects you can hold in your hand, stand on a desk or give to a client. Hand someone a 3D-printed object and there is a reaction of wonder and excitement I have never achieved with a finely worded strategy deck or a new business document.

But having waxed lyrical about the wonders of fused filament fabrication, there has been, slightly surprisingly for me, a fairly slow uptake of the technology among the design community I work with. From the first day the printer arrived at the office, I've been printing, designing, commenting and generally banging on about how great 3D printing is. Never a day goes by when the printer isn't printing something and for me the novelty hasn't worn off – in fact my interest is only increasing. However, the design team here wasn't really that fussed, and that did perplex me. Why aren't they interested in this great technology and designing things to print?

For me, 3D printing is inspiring, empowering and just bloody great, but I have recently realised a potential issue with the technology – specifically in a design environment – that I think needs to be addressed. Namely, if you can't create 3D forms, or if you can't use 3D modelling software, the only source of models you have to print are 3D models designed by other people (don't even think about 3D-scanning objects – unless you invest thousands on a scanner, it doesn't work) and of course, what designer wants to be limited by other people's ideas?

> "IT'S BEEN THE MOST EXCITING DISCOVERY I'VE MADE SINCE PHOTOSHOP 3 AND TRANSPARENT LAYERS"

Paradoxically, with that limitation comes a massive opportunity. Any designer in any discipline looking at the quality of objects to be found on most 3D model library websites would be totally uninspired by what they'd find there. But that's hardly surprising, because it's not designers that are creating the objects that supply the desktop 3D printing revolution at the moment, but hobbyists. Admittedly, there are lots of individuals (usually jewellery designers) who are creating some wonderful things, but on the whole, there isn't much out there – and that's where the exciting opportunities and potential lies, especially if you're a designer.

Graphic designers will need to learn how to access that third dimension – or Z-axis as most 3D-ers call it. It is very telling that most 2D designers I work ›

3D PRINTING IN PHOTOSHOP CC

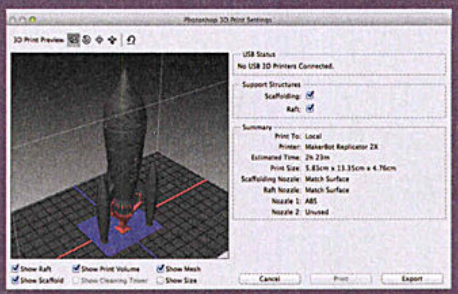
Adobe has recently built 3D printing capacity into Photoshop, so there's really no excuse not to give it a try

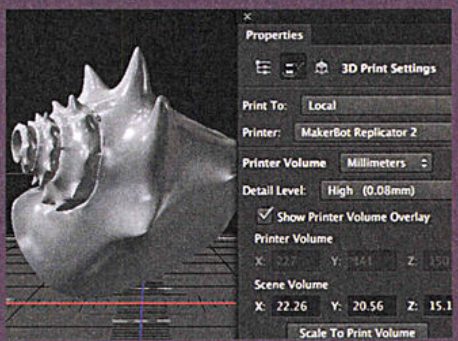
Following a major Creative Cloud update in January 2014, it's now possible to build, tweak, preview, prepare and print 3D models straight from Photoshop CC.

"The new tools for 3D printing give designers a way to create models from scratch, as well as importing them from almost anywhere," says Richard Curtis, Adobe's photography and imagery consultant. "Photoshop CC takes the hard work out of repairing, fixing and creating support scaffolding on 3D models, to create and ensure a fully watertight 3D printable object. Prints can also be reviewed before printing takes place."

Designs can either be printed to a locally connected 3D printer such as a MakerBot or Ultimaker, or via built-in access to online 3D print services such as Shapeways or Sculpteo. You're not restricted to plastic, either – Photoshop CC supports the full range of printing materials, including ceramic, metal and coloured sandstone.

When completed, models can also be shared online easily through the Sketchfab 3D publishing service, which is fully supported through Behance.





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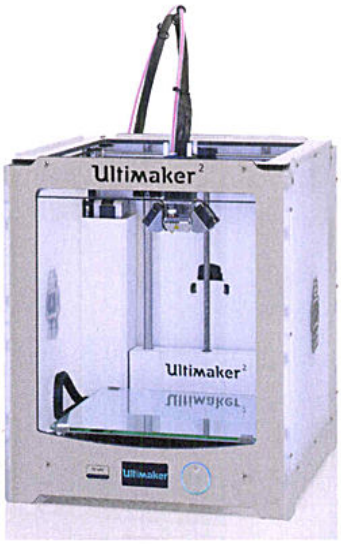
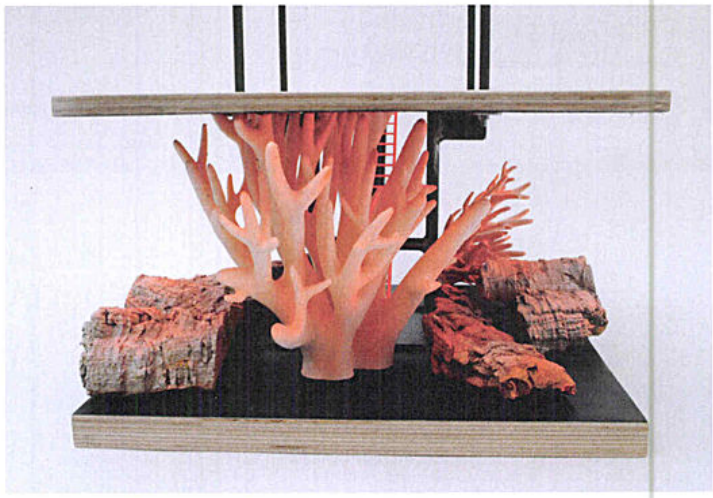


Left: Due for release in summer 2014, the Ultimaker 2 will have a larger capacity than the MakerBot Mini, and at £1,980 it sits in between that and the 5th Gen

Far left and below: Morag Myerscough 3D-printed the coral at the base of On a Giant Coral Far Away – created with Luke Morgan – with an Ultimaker Original, which comes as a DIY kit for £1,245



"THE POTENTIAL TO USE RECYCLED PLASTIC BOTTLES AS RAW MATERIAL FOR 3D PRINTERS IS INCREDIBLY EXCITING"

with will, for instance, kern a piece of type to the fraction of a point, position an element on a layout to within a fraction of a millimetre or tweak an RGB colour by a single digit to get the desired result – but ask them how large a 3D-printed object should be or how thick a return they want on a piece of extruded type and they'll hold up a thumb and index finger and say, "About that". The third dimension is an imprecise concept for them. Obviously, designers involved in product, architectural and spatial design are already familiar with the Z-axis, but most standard graphic designers aren't.

Interestingly, as a pointer to the future, a major graphics industry recruitment agency has predicted the next critical requirement employers will be looking for in their design teams will be the ability to model in 3D. Learn 3D geometry creation and your employability increases massively. Combine that skill with a 3D printing technology and the possibilities are endless. And when that does happen the exponential development of desktop 3D printing will echo that of the early days of computers and smartphones.

But until that time, I'm happy to be the go-to man for my company's 3D printing projects. As a small example, in the past few weeks I have designed and printed eyeballs with an on-off switch (why? I didn't ask), an Apple type product (leaving gift), security bracelets (solution to a problem) and more Higbys than you can shake a stick at. I'm asked to create solutions to problems that before we had the ability to 3D print wouldn't have even been considered solvable.

Of course, we've all read articles commenting on how 3D printing will revolutionise the medical, manufacturing, house building and fashion design industries, and help people in developing countries become more self-sufficient and empowered. The potential to use recycled plastic bottles as raw material for 3D printers is incredibly exciting, and the list of potential 3D-printing-related projects is growing all the time.

But my industry is graphic design and strangely, while usually leading the way in ideas and innovation, it seems to be slow on the uptake of this particular technology. But I just think it's the grasp of that Z-axis that is holding the revolution at bay – resolve that problem and who knows where the design world will be in a few years' time? If nothing else, at least the frustration of missing bits in flat-pack furniture will be consigned to history. ●

Next month: Create your own typeface with our guide to the best tools on offer