NEWS WEBSITE OF THE YEAR
The Telegraph
My Feed
Coronavirus News Politics Sport Business Money Opinion Tech Life Style Travel
See all Tech

How 3D printed homes could solve Britain's housing crisis

Councillors are increasingly interested in the technology which can construct houses within as little as a day

By Hannah Boland
20 October 2020 • 1:03pm

37

When leading futurist Matthew Griffin sat down after a keynote speech last year, the executives in the room were shell-shocked. Griffin had been asked to talk about the future of

housing and, to him, that meant 3D-printing.

Griffin explained how whole communities were already being “3D-printed” in Mexico, with robots pumping out house after house on blocks of land. Each property took a mere 24-hours to construct, with machines following digital blueprints and extruding layers of concrete and mortar.

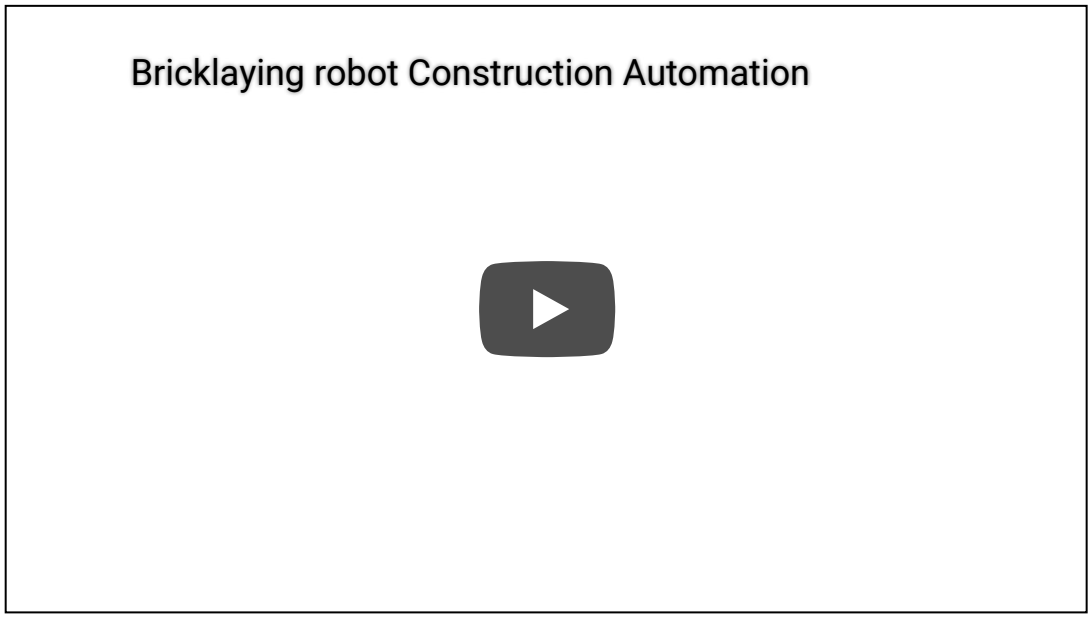
But his presentation received a chilly response from property execs in the room. “After I showed a video of the houses being printed, their faces dropped,” Griffin says. “I think they knew it was something that was coming, but you have to remember, they’ve got really good at building houses in the traditional way.

“And, fundamentally, when it comes to 3D printing, it would mean changing their entire business model.”

ADVERTISING

3D printers - devices which deposit molten plastic or powder to build an object layer by layer - have long been used to create prototypes and toy models. But the technology has evolved in recent years, with new materials and larger printers allowing engineers to create structures that were previously impossible.

Property firms may be loath to admit it, but change could soon be upon them. Already in the UK, trials are underway for brick-laying robots, with Yorkshire-based Construction Automation building a three-bedroom property earlier this month.

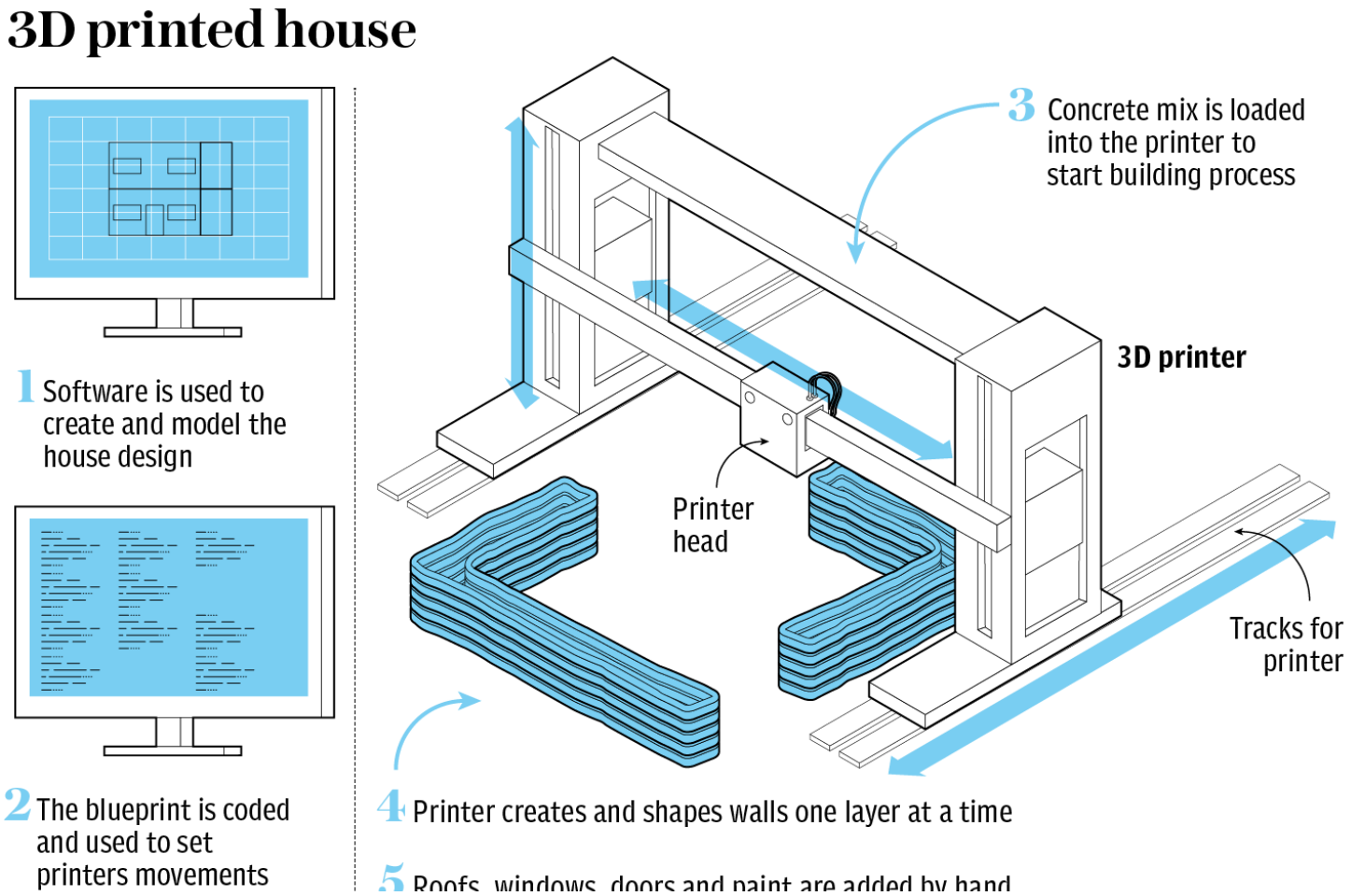


Councillors and government officials are becoming increasingly interested in technology which goes one step further, though. 3D printing is being touted by some as a potential solution to Britain's nationwide housing crisis, providing quick and cheap properties for the millions of people who live in unaffordable or unsuitable homes across the region.
In England alone, the housing crisis affects 8.4 million people.

Prior to the Covid-crisis, the Government had been feeling out the space. Last November, it appointed property consultant Mark Farmer as its champion for "Modern Methods of Construction" - a role, it said, would provide it with advice on how to increase the use of these modern techniques in home-building.

"The Government is recognising that it's highly likely that we'll see these more innovative space-age techniques come to the fore," says Farmer.

Griffin himself has seen a change in tone in recent years. There is, he says, a growing appetite. "Councillors and government ministers are saying things like, 'why can't I do this on a field in Hampshire?'. The answer is, they can."



Projects are already underway across the world to use 3D printing to construct buildings, and have been for a while. Only, up until this point, progress has been quicker outside of the UK.

In Dubai, for example, officials are planning for a quarter of all buildings to be built with 3D printing by 2030 and, last year, the nation signed a deal to have an 80-storey skyscraper 3D-printed, although that ultimately fell through after the company behind it went bust.

For smaller residential properties, though, 3D-printing has already yielded results.

Two years ago, a French family became the first to live permanently in a 3D-printed property, which had taken 54 hours to print. More recently, in Germany, work kicked off to build a two-storey family home, in a project which received funding from the North-Rhine-Westphalian government.

Some start-ups are making a name for themselves in the field. Mighty Buildings, a company based in California, is selling its units around the US state. The company uses a new composite material, which unlike concrete hardens almost instantly. These properties are

printed in a factory, the material funnelled through a nozzle, and then transported to locations, to save time on set-up.

The cost-savings are significant. Mighty Buildings is able to sell studios to customers for around $115,000, and three-bed family units for up to $285,000. On top of that, the company can handle everything from permits and site work, saving customers around 20pc or more on their build.

Cameron McLain, an investor in Mighty Buildings, says it became clear that “the world needs more affordable and sustainable housing, and 3D printing can be part of the solution”.

Sam Ruben, one of its co-founders agrees. “In some ways, it has already begun to creep into the edges of the mainstream.”

It is not just Mighty Buildings which is gaining a foothold in this emerging market. Icon, one of the companies which worked on the Mexico community project, has also been touted as a key pioneer for 3D printing techniques.

Vice president of operations Dmitri Julius says the primary goal of the company is “making housing more sustainable, beautiful and affordable for individuals all across the globe”.

Icon says its printing techniques can cut build times down by 75pc | CREDIT: Icon

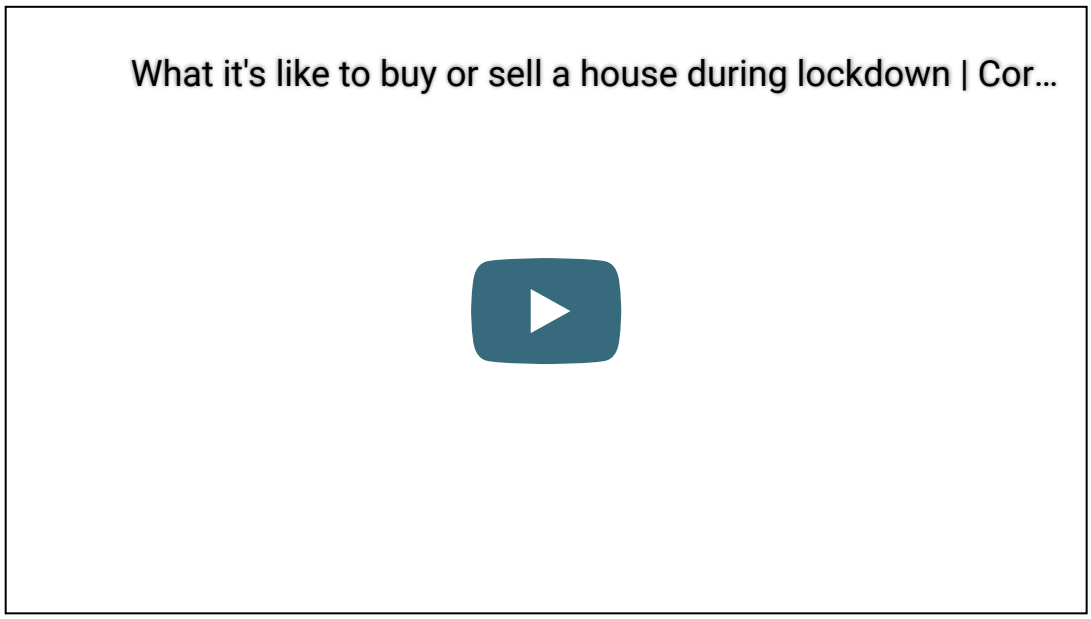
Like Mighty Buildings, Icon is looking to do this by cutting down average build-times by using its printers - in its case by around 75pc, and by printing multiple units at one time. “If you had a fleet of let's say 10 printers and each one of those printers could theoretically knock out a house every one to two weeks, then you're really starting to make a meaningful impact as far as lowering costs, and speed to delivery,” he says.

In future, Icon sees the potential for it to hand these machines off to builders and tradespeople, and so is making the printers “incredibly simple for them to use”.

These companies are not just looking to the American market. In fact, Julius says, there are opportunities for this all over the world. Ppportunities which have only grown due to the Covid-19 pandemic which has woken many people up to the need for houses to be “suitable spaces for us to work and educate our children, and to feel relaxed”. Mighty Buildings agrees that the UK appears a “great market that already understands the benefits of prefabrication and has a lot of opportunity to take that to the next level.”

With Covid-19, that opportunity has only become greater. As the pandemic has advanced, properties have become further out of reach for many first-time buyers. With the temporary

stamp duty holiday introduced earlier this year in the midst of the pandemic, house prices here in Britain have hit record highs.



Figures released last week from Rightmove found that the average home price was £323,530, up 5.5pc on last year, and the fastest rate of growth in more than four years. As demand has ticked ever-higher, first-time buyer numbers have been tumbling.

“The stars are finally aligning to make it clear that we cannot continue and rely upon contracted building suppliers in the way we always have done," says Richard Valentine-Selsey, a Savills analyst. "Any way that we can create new housing is beneficial, because we will not get to the Government's 300,000 homes per year target if we don't have more people active in this space.

“3D printing should be and probably will be one of the many tools to deliver housing. It may start out as a niche high-end project, but as it matures, then you could start seeing it trickling down."

There are some who would argue that the change in working habits, which has seen huge numbers of people shift to remote working, could provide an unexpected boon for those hunting for houses, though. It could, some say, free up commercial properties to be converted into residential properties, and so offer a solution to the housing crisis in itself.

But, not everyone is convinced. Griffin says conglomerates may be looking to exit their leases in skyscapers, but these properties are quickly being scouted by tech giants who have benefitted from the pandemic. “These tech companies are very cash rich and they see this as an investment opportunity to buy real estate in pretty favourable locations for next to nothing.”

All this opens the field up to 3D-printing companies to make their play in Britain. Up until this point, experts say there have been hurdles to overcome here in the UK. Even now, government champion Farmer says "it would be unacceptable in Britain to just leave a concrete structure. The building would cladding, and fitting out".

For him, there is still "some way to go". Yet, 3D printing may be a trend that is quickly coming down the line.

“When you think about it, it’s the same question as why General Motors and Ford and Volkswagen didn't produce electric cars sooner when they could have,” futurist Griffin says. “What you need is an external disruptor to come in. That then shakes up the industry, and then the industry incumbents start moving.”

With demand for properties at record highs and external disruptors chomping at the bit, these companies may have to start moving sooner than they think.

Do you think 3D printed homes could solve Britain's housing crisis? Let us know in the comments section below.

Technology Intelligence newsletter

Your essential guide to technology today, from London and Silicon Valley.

Sign up

Related Topics

House prices, Property and construction industry

37