the futures foundation
engaging all Australians in creating a better future...

Volume 19, No. 2, April 2019

FUTURE NEWS

TO CONNECT, TO INFORM AND TO INSPIRE

IN THIS EDITION

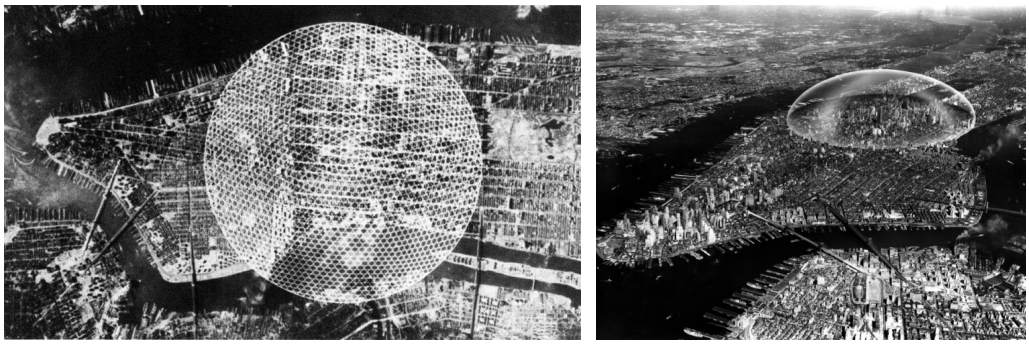
futures foundation Australia • Ross House, 247 Flinders Lane, Melbourne 3000 • Phone: 03 9029 5787

ARCHITECTS OF THE FUTURE

COULD FANTASTICAL PLANS FOR THE CITIES OF TOMORROW SOLVE THE REAL PROBLEMS OF URBAN LIFE?

by Darren Garrett

In 1960, Buckminster Fuller had an idea to transform New York City: a two-mile-wide geodesic dome over the top of Manhattan. The self-titled "anticipatory design scientist" wanted to cover the city from the East River to the Hudson and from 21st Street to 64th Street. The dome, made with aluminum and shatterproof glass, would "regulate weather and reduce air pollution." It was an ambitious project, Fuller acknowledged, but, "the cost of snow removal in New York City would pay for the dome in 10 years."



Buckminster Dome. Buckminster Fuller and Shoji Sadao

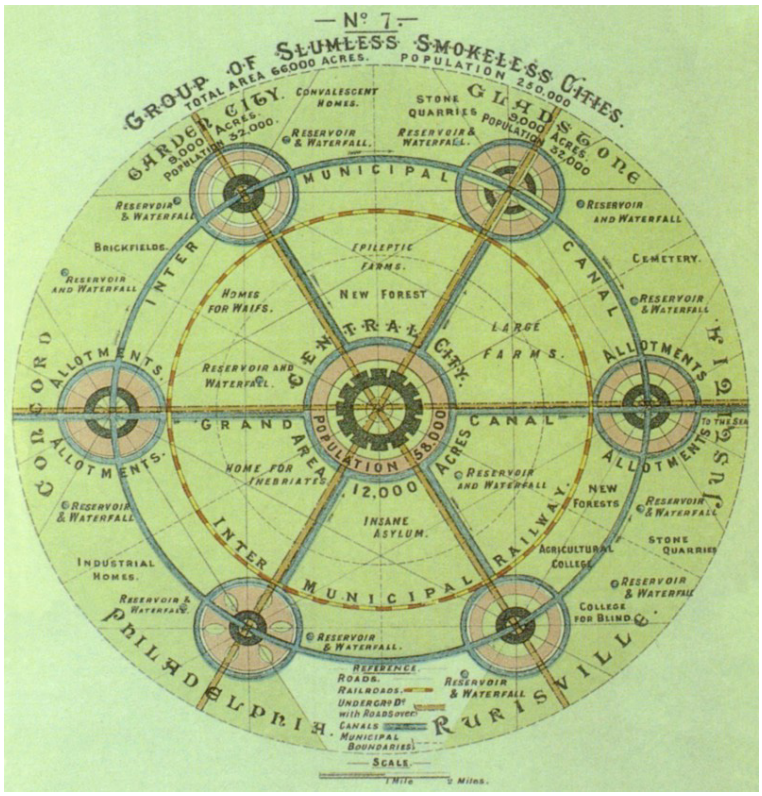
The dome wasn't Fuller's only plan for the city of the future. Triton, a two-square-mile tsunami-proof floating city, would provide its 5,000 residents with everything from water to education. It was originally conceived for Tokyo Bay by Matsutarō Shōriki, who sent the proposal to Fuller. In the U.S., it was supported by the Department of Urban Development; and when its "water-worthiness" was signed off by the Navy's Bureau of Ships, the City of Baltimore proposed it be built in Chesapeake Bay. (The idea was ultimately sunk by bureaucracy.)

For centuries, architects and urban planners have mixed the mundane with the fantastical as they imagined the cities of the future. While some ideas toyed with the building blocks, others reflected a desire to fundamentally reshape urban life—and to solve some of society's most pressing problems. Their plans were a mix of ambition, realism, fantasy, and folly—but were the resulting ideas visionary, or just dreams of worlds that could never feasibly be built?

As cities grew rapidly in the early modern era, overcrowding, unsafe, and unsanitary conditions led reformers to think about the future shape of urban centers. Some proposals came on the backs of disasters: after the Great Fire of London in 1666, Christopher Wren proposed rebuilding the city with the aim of bringing "order and direction." Safety features like widening the streets would prevent fire spreading, while long boulevards and plazas would provide "pomp and regularity." A total overhaul wasn't logistically feasible, however—London ended up being rebuilt along the routes of its original medieval streets.

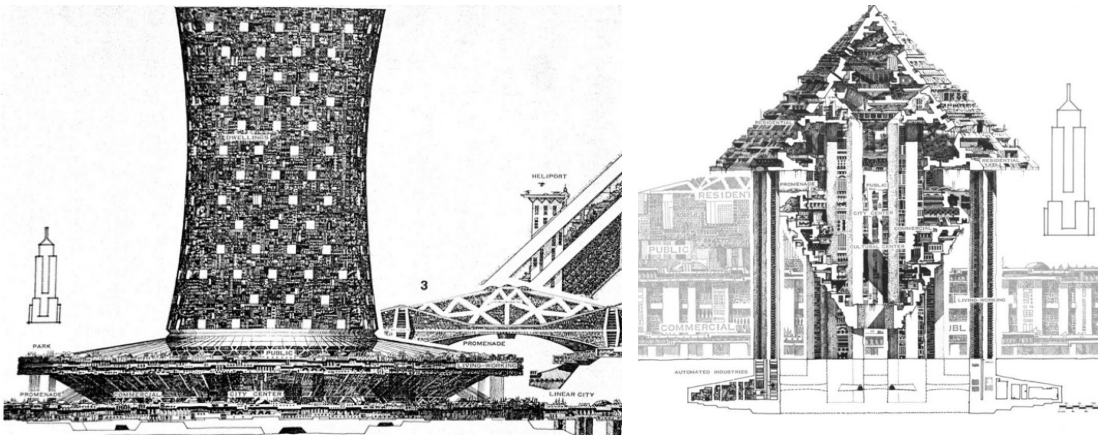
In the 18th century, James Edward Oglethorpe's ideas were much grander. A politician and social reformer, he saw the establishment of a penal colony in Georgia as a way to break the cycle of poverty and crime he'd seen in London. Some of his plans for reform centered on the physical structure of cities: the shape of Savannah integrated radical physical planning with an aim to promote social equity.

More than a century later, Ebenezer Howard planned a circular utopian city where humans and nature would be closely connected. Designed to deal with physical problems like pollution and overcrowding, the physical structure of these "slumless smokeless cities" would help address the social problems associated with poverty. Sectors of the city would have allocated uses, with areas for farming and reservoirs, and social care for groups like "waifs" and "inebriates."



"The Garden City Concept" from "Garden Cities of Tomorrow."
Ebenezer Howard, 1902.

While Howard believed better cities would have expansive space and green areas, early 20th-century Italian architect Paolo Soleri sought to lessen horizontal sprawl and ecological impact by heading upwards. His concepts were monumental in scale and almost alien in design. Babel was a vast tiered circular city with a population of half a million. Hexahedron's pyramidal structure was raised on stilts, with commercial and civic spaces giving way to residential and cultural areas as it rose up.

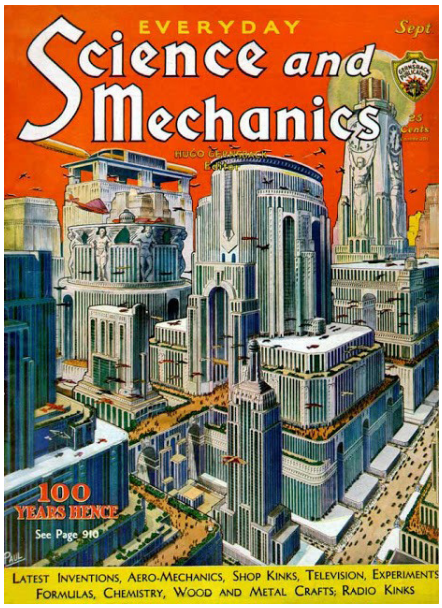


Concepts for Babel IID and Hexahedron. The line drawing to the left and right of each plan, respectively, shows the Empire State building for scale.
Arcology, Paolo Soleri, 1969.

When New York City came close to bankruptcy in 1972, architect Peter Blake proposed that Walt Disney Productions should take over the city. As he wrote in *New York Magazine*, "the only new towns of any significance built in this country since World War II are Disneyland….. and Disney World." He wasn't suggesting that the city be turned into a giant theme park, but instead referred to Disney's visions for urban planning and implementation.

EPCOT, the Experimental Prototype Community of Tomorrow, was one of Walt Disney's passion projects. Its plans were based on a radical design similar to Ebenezer Howard's "Garden Cities of Tomorrow," including a fully-pedestrianized central city with monorails running out from the central hub to suburban living spaces "like spokes from a wheel."

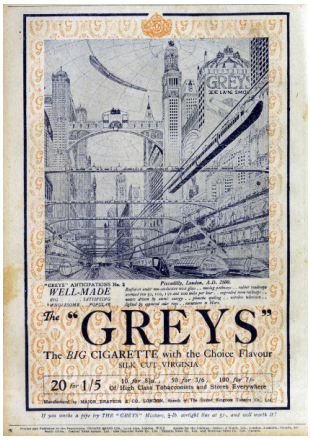
In October 1966, Disney presented his ideas about what he called "The Florida Project"—now better-known as Disney World—in a short film. He worked on EPCOT up to his death just two months later, but he would not see his dreams come to fruition. While EPCOT would never be built as it was originally envisioned, some ideas would be integrated into the park, especially in the EPCOT Center, opened in 1982.



"100 years hence."*Frank Rudolph Paul, Science and Mechanics, 1931*

Asked in an interview why people would come to EPCOT, friend of Disney and science fiction writer Ray Bradbury said: "Because they want to look at the world of the future. They want to see how to make better human beings….What Disney is doing is showing the world that there are alternative ways to do things that can make us all happy. If we can borrow some of the concepts of Disneyland and Disney World and EPCOT, then indeed the world can be a better place."

On a smaller scale—financially, if not conceptually—the future of the city became a common theme for artists in advertising and periodicals over the 20th century. In 1931, Hugo Gernsback's *Science and Mechanics* jumped forward 100 years to look at 21st-century New York City. The Empire State—the tallest building in the world until the construction of the World Trade Center towers in 1973—is dwarfed by the immense structures behind it, which come adorned with classical statues on a scale with the Colossus of Rhodes. Flying traffic fills the sky, while multi-laned roads crisscross buildings on multiple levels.

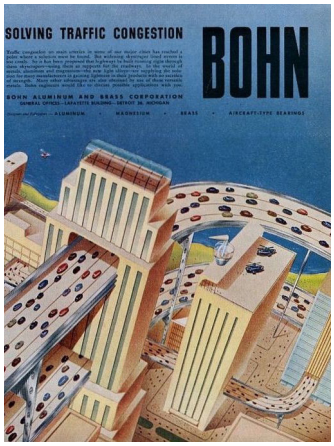


Frank Rudolph Paul, who created the cover, started out studying architecture. In a career tied closely to Gernsback's, he became one of the period's most popular pulp artists, producing the first cover for *Amazing Stories*, and the cover for *Marvel Comics #1* in 1939.

In the 1920s, Greys Cigarettes produced a series of "anticipations," taking a look at London 500 years in the future. Skyscrapers far taller than any of the period are linked by "moving pathways" under huge domes. "Suspended mono railways" supply transportation links, as do vehicles powered by atomic energy moving at "50,

100, 150, 200 MPH" on rubber roads. Small, intriguing details abound, like a monument stretching above the city dedicated to "The Heroes Of The Martian War."

Weather-proof domes, a popular theme when depicting the cities of the future, also show up in Arthur Radebaugh's "Closer Than We Think" comic strips. Atomic-powered cities under the ice caps, air-controlled glass-domed cities with moving walkways, and Megalopolis, a domed strip city that could conceivably run between Boston and Washington, D.C.

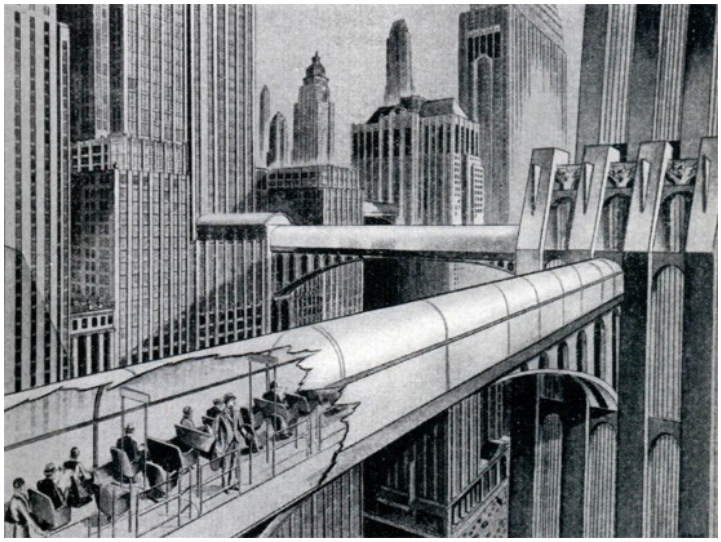


Keeping cities moving was an increasingly difficult problem: as populations grew, roads and sidewalks became more and more congested. Imagining future transport poses an interesting challenge for artists—and a perfect way to advertise building materials.

As city congestion grew, engineers from Bohn were on hand with a possible solution: since widening roads lined with skyscrapers would be too costly, why not simply go through them? These dizzyingly high roadways would be supported by structures built with Bohn's "versatile metals."

Artists didn't leave pedestrians behind: "endless belt trains" would travel high above the city, and moving walkways were a frequently-imagined feature, such as in "Magic Highway U.S.A."

The skies of future cities had been full of flying vehicles since the 19th century. In 1939, an issue of *Popular Science* imagined our airborne transport in detail, with skyscrapers serving as airports and landing strips. Commuters would travel by private plane, taking elevators to a 250,000-space car park. Transport planes, blimps, and dirigibles bring travelers directly into the heart of the city. Once again, the Empire State Building is dwarfed by these futuristic structures.



Left: "Endless Belt Trains for the Future Cities" *Unknown artist, 1932*
Right: "Sliding walkways" *Frank R. Paul, Amazing Stories, 1928.*

"Skyscraper Airport for the CIty of Tomorrow."
B.G. Seielstad, Popular Science, 1939.

How do grand visions meet reality? Fantastical ideas for future cities *have* found more practical champions: in a speech at Harvard University included in the original EPCOT pitch film, urban planner James W. Rouse said, "I hold a view that may be somewhat shocking to an audience as sophisticated as this: that the greatest piece of urban design in the United States today is Disneyland."

Disneyland, while made from bricks and mortar, is still a fantasy. The idea that Disney could somehow solve real problems in an established complex city like New York seems a fantasy as well. Many artists who dreamed up visions of the future favored massive, impressive schemes over the more incremental, less glamorous solutions of city planners. If these visions could never be implemented, what purpose do they serve?

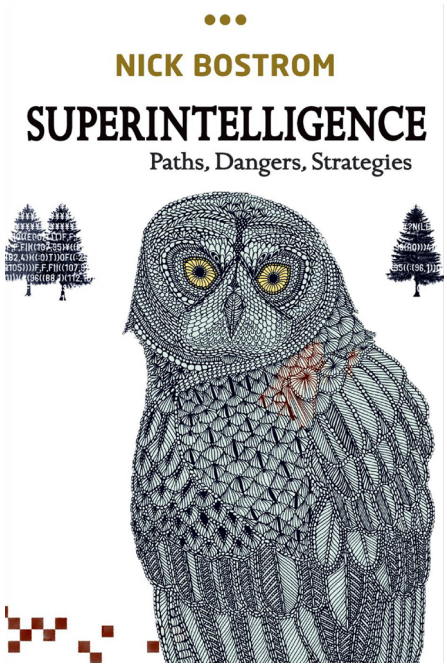
Whether or not ideas like the original plan for EPCOT or "An Imaginary Metropolis" are feasible, it may be irrelevant. Instead they offer us a fantastical mirror—places free from the real-world problems our cities face, like poor planning, uncontrolled sprawl, and social inequality. They offer an ideal to strive for, and at the very least they are a love letter to the idea of the city—and many of them we can now inhabit, if only in fiction, films, and computer games. Spaces where—unhampered by the realities of money and bureaucracy—the Metropolis of Tomorrow can thrive.

This is an abridged version of an article that first appeared here:
https://howwegettonext.com/architects-of-tomorrow-d9ac4849a054
and is reproduced with permission.

Superintelligence
by Nick Bostrom

Book Review

by Charles Brass – Chair, futures foundation



The preface to Superintelligence begins with these words:

> "Inside your cranium is the thing that does the reading. This thing, the human brain, has some capabilities that the brains of other animals lack. It is to these distinctive capabilities that we owe our dominant position on the planet. Other animals have stronger muscles and sharper claws, but we have cleverer brains. Our modest advantage in general intelligence has led us to develop language, technology, and complex social organization. The advantage has compounded over time, as each generation has built on the achievements of its predecessors.
>
> If some day we build machine brains that surpass human brains in general intelligence, then this new superintelligence could become very powerful. And, as the fate of the gorillas now depends more on us humans than on the gorillas themselves, so the fate of our species would depend on the actions of the machine superintelligence.
>
> We do have one advantage: we get to build the stuff. In principle, we could build a kind of superintelligence that would protect human values. We would certainly have strong reason to do so. In practice, the control problem – the problem of how to control what the superintelligence would do – looks quite difficult. It also looks like we will only get one chance. Once unfriendly superintelligence exists, it would prevent us from replacing it or changing its preferences. Our fate would be sealed" (pv).

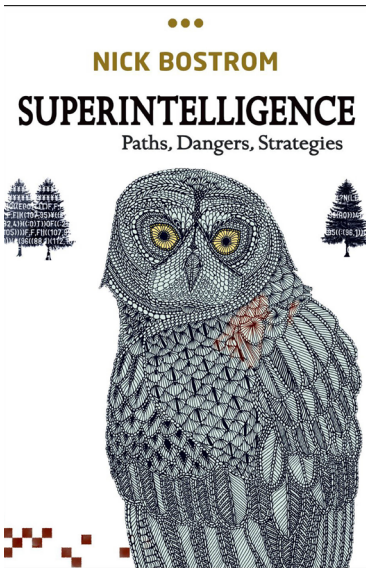
The next 320 pages try to explain what superintelligence might mean (four different types – human-brain emulation; artificially created biological cognition; human-brain interface and artificial neural organization; and three different forms – superintelligence that is faster than us, that is better than us, or that operates more collaboratively than us – are explored in some detail); when and how it might occur and how it might be controlled both before and after it emerges are all subjected to forensic scrutiny.

Nick Bostrom is a philosopher – but a very practical philosopher (he directs the Strategic Artificial Intelligence Research Centre at Oxford University) which means the questions he asks are deeply challenging, but also means that the possible answers he explores cover every conceivable contingency.

He points out that concerns about the possibility of human created superintelligence have been around for at least 70 years[1], but it has only been in this century that the possibility has seemed real enough to warrant the sort of analysis that Bostrom gives it in this book.

Bostrom explicitly leaves any estimates of the time that might be needed to achieve superintelligence out of his analysis[2] arguing that whatever the timeframe, the time to begin thinking about how this might occur, and how its occurrence

1. He quotes mathematician I.K. Good who wrote in 1965: "Let an ultraintelligent machine be defined as a machine that can far surpass all the intellectual activities of any man however clever. Since the design of machines is one of these intellectual activities, an ultraintelligent machine could design even better machines: there would then unquestionably be an 'intelligence explosion', and the intelligence of man would be left far behind. Thus the first ultraintelligent machine is the last invention man need ever make, provided that the machine is docile enough to tell us how to keep it under control." (p5)
2. He does devote pages 22-25 to reporting on some recent surveys on this issue of researchers in the field.



might be controlled is now. He also clearly demonstrates that (despite some deficiencies he is careful to note) modern philosophical enquiry is capable of asking the questions we need to ask, and even of pointing out some of the possible answers.

Chapters 2 and 3 of the book explore in detail the types and forms of superintelligence that were mentioned above, after which Chapter 4 begins to think about how and when an intelligence explosion might occur. This chapter is not concerned about how far into the future this might happen, but rather when it does happen will it happen slowly or quickly. As is typical throughout the book, Bostrom takes time to explore all the dimensions of this question (pondering for example how many people might be the first to realise that a superintelligence had been created and what their (and the rest of the world's) reactions might be), and he concludes that there are: "some reasons for thinking that the slow transition scenario is improbable. If and when a takeoff occurs it will likely be explosive." (p79)

It is perhaps for this reason that he comments in the Afterword to the paperback edition: "I just happen to think that, at this point in time, whereas we might get by with a vague sense that there are (astronomically) great things to hope for if the machine intelligence goes well, it seems more urgent that we develop a precise detailed understanding of what specific things could go wrong – so that we can make sure to avoid them." (p314)

Chapter 5 asks whether a single superintelligent power will emerge, or will many different projects succeed, and what would either outcome mean for the universe (and I do mean the universe – Bostrom is very clear from early on that a genuine superintelligence is not going to restrict itself to this planet, this solar system or even this galaxy).

Chapter 6 then begins looking at what a superintelligence might do ("suppose that a digital superintelligent agent came into being, and that for some reason it wanted to take control of the world, would it be able to do so?" p120) and why might it want to do whatever it does – what will its goals be?

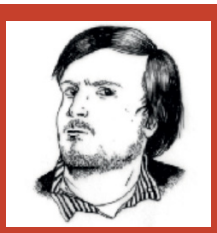
Chapter 8 begins to think about the consequences of superintelligence, asking how menacing this prospect is and then wondering how it might be controlled. Various intriguing possible control mechanisms are discussed, from the physical (enclose it in an 'escape proof' box) to the motivational (make sure it is programmed to 'do good' – the exact meaning of which philosopher Bostrom explores in great detail, not just in this chapter but also in Chapters 12 and 13).

Bostrom's final two chapters begin to look at some of the longer-term policy implications of all of his previous analysis. He begins by looking at how current investments in science and technology are prioritised, and concludes that research into potential safeguards that might need to be in place before a technology is perfected is not currently given a high priority – yet this is exactly what he is implicitly calling for in this book (and many examples in Chapter 13 demonstrate how foresightful some researchers are on this issue, and how little traction their research is gaining in the wider world). At the end of Chapter 14 he makes a powerful case for encouraging (if not mandating) much greater collaboration between researchers on AI as an important first step.

Chapter 15 begins by concluding that with respect to the potential of machine intelligence: "we find ourselves in a thicket of strategic complexity, surrounded by a dense mist of uncertainty" (p134) and yet we have to do something. He summarises our imperative this way:

> "(In the face of) the prospect of an intelligence explosion, we humans are like small children playing with a bomb. Such is the mismatch between the power of our plaything and the immaturity of our conduct. Superintelligence is a challenge for which we are not ready now and will not be ready for a long time. We have very little idea when the detonation will occur, though if we hold the device to our ear we can hear a faint ticking sound" (p319).

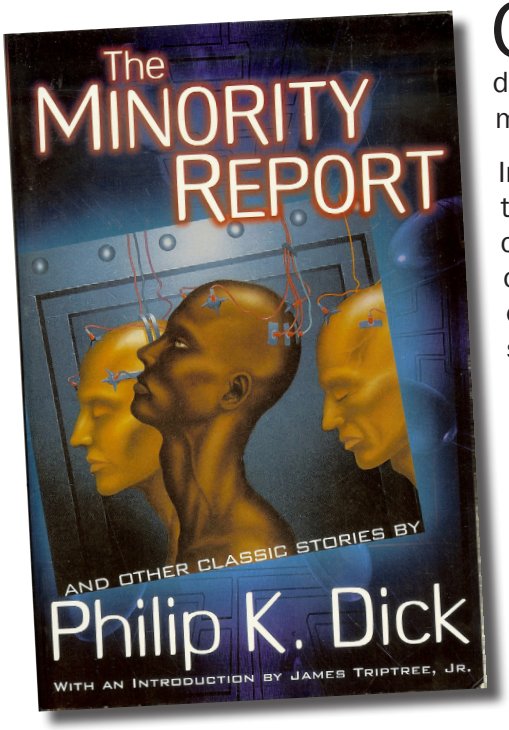
FUTURISTS IN ACTION



NIKE AND BOEING ARE PAYING SCI-FI WRITERS TO PREDICT THEIR FUTURES

WELCOME TO THE SCI-FI INDUSTRIAL COMPLEX

by Brian Merchant



One of the most influential product prototypes of the 21st century wasn't dreamed up in Cupertino or Mountain View. Its development began around a half-century ago, in the pages of a monthly pulp fiction mag.

In 1956, Philip K. Dick published a short story that follows the tribulations of a police chief in a future marked by predictive computers, humans wired to machines, and screen-based video communications. Dick's work inspired a generation of scientists and engineers to think deeply about that kind of future. To adapt that same story into a $100 million Hollywood film 50 years later, Steven Spielberg sent his production designer, Alex McDowell, to MIT. There, a pioneering researcher—and lifelong Dick fan—named John Underkoffler was experimenting with ways to let people manipulate data with gloved hands. In 2002, a version of his prototype was featured in the film, where it quickly became one of the most important fictional user interfaces since the heyday of *Star Trek*. Bas Ording, one of the chief UI designers of the original iPhone, told me his work was inspired directly by the gesture-based system showcased in *Minority Report*.

> *"The gap between sci-fi—that which was once imagined—and sci-fact—that which becomes manifest and real—is shrinking.*

For the past century, this messy, looping process—in which science fiction writers imagine the fabric of various futures, then the generation reared on those visions sets about bringing them into being—has yielded some of our most enduring technologies and products. The late sci-fi author Thomas Disch called it "creative visualization" and noted there was no more persuasive example of its power "than the way the rocket-ship daydreams of the early twentieth century evolved into NASA's hardware." Submarines, cellphones, and e-readers all evolved along these lines.

Minority Report produced a hundred patents and helped rapidly mainstream the concept of gesture-based computing—not just the iPhone but all touchscreen tablets, the Kinect, the Wii—and became cultural shorthand for anyone looking to point their ventures toward the future. Before they even had a script, Spielberg convened a two-day "idea summit" around the film with the intent of establishing a lifelike futureworld. Icons like virtual reality pioneer Jaron Lanier and *Whole Earth Catalog* creator Stewart Brand joined folks from DARPA and the *Washington Post* and spent days dissecting cultural trends and technological trajectories. They drew a detailed road map to a world marked by targeted video advertising, invasive surveillance drones, and nimble autonomous cars—things that may have seemed outlandish in 2002 but are all too real in 2018.

The film's world—not its plot or stars—became an aspirational culture product in itself. "I wish I could get away with charging my clients a fee for every time they say '*Minority Report*' to me," one Los Angeles commercial artist remarked a full decade after the film was released. To certain observers, *Minority Report* helped transform the bridge between science fiction and real technology into a pipeline.

In the decade since, the business world has been increasingly aware of the genre's potential. In 2017, PricewaterhouseCoopers, the professional services firm that advises 440 of the Fortune 500 companies, published a blueprint for using science fiction to explore business innovation. The same year, the *Harvard Business Review* argued that "business leaders need to read more science fiction" in order to stay ahead of the curve. "We're already seeing science fiction become reality today," said Google's then-CEO Eric Schmidt in 2012. "Think back to *Star Trek*, or my favorite, the *Hitchhiker's Guide to the Galaxy*—much of what those writers imagined is now possible," he said, ticking off auto-translation, voice recognition, and electronic books. Jeff Bezos' product design team built the Kindle to spec from Neal Stephenson's book *The Diamond Age*. (Stephenson himself is the chief future at the multibillion-dollar-valued Magic Leap.) Josh Wolfe, a managing partner at Lux Capital, is pouring millions of dollars into companies building what he explicitly describes as "the sci-fi future." "I'm looking for things that feel like they were once written about in science fiction," he told *Fortune*. "The gap between 'sci-fi,'—that which was once imagined—and 'sci-fact,' that which becomes manifest and real, is shrinking."

luxcapital

A number of companies, along with a loose constellation of designers, marketers, and consultants, have formed to expedite the messy creative visualization process that used to take decades. For a fee, they'll prototype a possible future for a client, replete with characters who live in it, at as deep a level as a company can afford. They aim to do what science fiction has always done—build rich speculative worlds, describe that world's bounty and perils, and, finally, envision how that future might fall to pieces.

Alternatively referred to as sci-fi prototyping, futurecasting, or worldbuilding, the goal of these companies is generally the same: help clients create forward-looking fiction to generate ideas and IP for progress or profit. Each of the biggest practitioners believe they have their own formulas for helping clients negotiate the future. And corporations like Ford, Nike, Intel, and Hershey's, it turns out, are willing to pay hefty sums for their own in-house *Minority Reports*.

"We've just wrapped a worldbuild today, just now in fact," Alex McDowell tells me, collapsing into an office chair. His mess of brown-to-graying hair falls over a pair of designer glasses. "I'm sorry it took so long."

Experimental design

Experimental.Design, McDowell's worldbuilding company, is nestled in an expansive cluster of rooms and offices in the hip downtown Los Angeles co-working outfit Spaces. After *Minority Report*, McDowell began spending less time in studios and more in spaces like these. With credits like *Lawnmower Man*, *Fight Club*, *Charlie and the Chocolate Factory*, and *Fantastic Mr. Fox*, he was one of the most sought-after production designers in Hollywood. But by 2013, McDowell had all but walked away, turning his attention fully toward worldbuilding.

Whiteboards line the walls of the studio, and they're covered—and we're talking *covered,* to the improbable degree of a Hollywood film about a

troubled math whiz—with diagrams, lists, and notes. McDowell was working on a project for the University of Alaska, and the scrawl concerned government policy, ecological collapse, and educational architecture. Look closer, and they all extrapolate current trends affecting Alaska and its universities into the future. "The goal is to envision a future where the education system is completely subservient to the student," McDowell says. He's working with the school system to envision the trajectory of higher ed in the 49th state, which currently has the nation's lowest rate of transition between high school and college.

wbi world building institute

"In worldbuilding, we are not dealing with prediction or trends. We are looking for arcs of history through present to future at multiple scales that properly represent each unique world. We extrapolate forward to immediate, near, or far future horizons.

McDowell points to one wall largely filled by a colorful diagram, which he calls the Worldbuilding Mandala. The labels Mind, Body, Self, and Fuel are clustered in the center. They branch out to Governance, Structure, Culture, and Energy and represent a method of organizing data about how an individual is situated in a given world. "Worldbuilding is about understanding a world deeply enough that stories and narratives spring effortlessly from its fabric," McDowell says. "It's almost like taking a great horizontal slice of a world and making it so you can drill down vertically at any point to see more details and dimensions." It's heavily researched, fact-based speculative fiction with a promise to consider every conceivable angle.

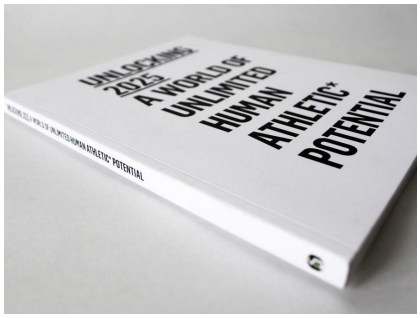
It's also a rich tradition in sci-fi: Countless workshops, courses, and books have been dedicated to teaching writers to build effective, narratively compelling fictive worlds; it's a bona fide (and sometimes contested) hallmark of the genre. From the hallucinatory, otherworldly environs of *Dune* to the down-home paranoid dystopias of Dick, we respond to speculative fiction when it lets us experience the distinct dimensions of the future.

McDowell teaches his action-oriented variant of practice at USC, where he leads its Worldbuilding Lab. He also runs the nonprofit Worldbuilding Institute. Over the years, McDowell and his partners have made near-future worlds for Nike, Ford, the American Society of Civil Engineers, Boeing, and even an indigenous tribe whose language and culture are at risk of dying out. Phase one costs roughly $100,000 per month for a minimum of three months and ideally begins with a multiday, in-depth summit with dozens of stakeholders. Invitees are broken out into groups and given a series of questions, or "provocations," about the future. Discussion ensues, "domain experts" are interviewed, data is collected, and notes are fed into custom software—and a media-rich story is constructed. "In worldbuilding, we are not dealing with prediction or trends," McDowell says. "We are looking for arcs of history through present to future at multiple scales that properly represent each unique world. From the past and present, we extrapolate forward to immediate, near, or far future horizons."

The results can be surprising: Ford's worldbuild resulted in a "City of Tomorrow," in which smart cars and autonomous ridesharing vehicles yield to pedestrians. This imagined city, presented at the 2018 Consumer Electronics Show and which Experimental continues to update and expand, was built around the idea that people would "reclaim the streets" from congestion and accidents. Even from cars themselves. "By enabling one kind of freedom, we restricted another," Jim Hackett, CEO of Ford, said in the CES keynote, acknowledging cars' deleterious effects on urban life. Smart sensors, autonomous vehicles (Fords, of course), and renovated former parking lots would cede the city to pedestrians. A car company pushing back against decades of, well, car culture struck industry analysts as "bold, and incredibly risky."

> *It should come as no surprise that these worlds are usually flattering to the client.*

For Nike, McDowell's worldbuild resulted in a book called *Unlocking 2025: A World of Unlimited Human Athletic Potential* and an immersive website that allows users to follow athletes through a world beset by climate change, microsponsors, and health monitoring technologies. Click on a character called Mateo, and up comes the tale of a street soccer player in Brazil. "Since Google UA began supporting the street scene, and fitness more generally, democratized football has become massively popular," it reads. "Chasing the ball, Mateo thinks about earlier today at the academy, sweating in the Amazonian humidity [this part links to research on climate and pollution impacts in Manaus], having his kick and gait dissected, and his insides—hydration levels to lactic acid—brought outside, into the charts of coaches and data analysts who talk in hushed numbers, making Mateo feel like a machine, not a player."



It should come as no surprise that these worlds are usually flattering to the client. McDowell's educational and nonprofit work—he is envisioning, for instance, the future of Skid Row with his USC students, sociologists, and activists—was frankly so good that I wouldn't hesitate to call it inspiring. The commercial work, which he describes as aspirational, must confront a companies' place in these future worlds without casting them as a bad actor.

"It is our job to engage the client as a partner in the discovery of their world," McDowell says. "We take on board their vision, or their intent, or their understanding that the future may violently or radically disrupt their former model"—this is the most common scenario, he says—"but we never predict the outcome, and we encourage every client to remain open to the possibility that the worldbuilding process will discover a completely unexpected outcome. If any client is set in their fantasy, then it will remain a fantasy."

The headquarters of SciFuture, another central player in this nascent industry, sits just above the Psychic Eye Occult Bookshop, on the second floor of a small business complex on Ventura Boulevard that smells slightly of incense. The company's office is mostly one large, open, naturally lit room and a small bookshelf, where Neal Stephenson titles line the top row. Ari Popper, CEO of SciFuture, is thin and unimposing, with an easy smile and an undercurrent of nervous energy. He grins as I come up the stairs.

Popper started SciFutures in 2012; he had burned out on his previous market research job and idly taken a writing class at UCLA. "I did this course, and it was—*click*—one of these epiphany moments: Maybe I can use science fiction to help companies," he says. SciFutures offers clients custom-built science fiction stories and scenarios, courtesy of the 200 writers the company keeps on tap. The talent ranges from aspiring scribes still looking to break out to Hugo-winning heavyweights like Ken Liu.

> *It's science fiction based on science fact. It's used as a way to prototype the future, and sci-fi is about people.*

Popper says he relies on a process called "science fiction prototyping." The man who literally wrote the book on the method is Brian David Johnson, a professor, engineer, and sci-fi author based in Portland, Oregon. In his book *Science Fiction Prototyping: Designing the Future with Science Fiction*, Johnson outlines "How to Build Your Own SF Prototype in Five Steps or Less." It begins by exhorting practitioners to "Pick Your Science and Build Your World," moves on to instructions on how to identify the inflection point upon which that science or technology will collide with people, and suggests a framework for considering the ramifications. It's sort of a basic sci-fi writing prompt guide through the lens of business management literature. "It's science fiction

based on science fact," Johnson says. "It's used as a way to prototype the future, and sci-fi is about people." The best example, he says, is Intel, where until recently he served as chief futurist. "It took Intel 10 years to design and deploy a chip, so they needed to know 10 years out what people would do with computers."

For an initial fee in the range of $50,000, SciFutures will take a prompt from a client—say, the Future of Sustainability for Naked Juice, or the Future of Home Improvement for Lowe's—and farm it out to 30 or so writers. Popper and company read the stories, which usually clock in around 1,000 words (he typically pays writers $300 to $500 for each one, though more seasoned writers can command more), and scan them with an eye to intellectual property, novelty, and technology. Then they'll choose five or so and polish them up for delivery to the client, often translating them into graphic novels or other media. If the client is hooked on a specific science fictional idea, SciFutures will help them develop further blueprints, even actual prototypes.

"The program we helped set up for Lowe's is a phenomenal case study for how science fiction prototyping can transform culture, bring genuine innovation into the business," Popper says. The hardware chain told him it was having trouble getting customers commit to home improvement projects, so SciFutures put forward the idea of decorating in virtual reality. "This was before Oculus—VR wasn't a thing, AR wasn't a thing."

The story prototype follows a couple who try to renovate their house the old-fashioned way but keep running into problems. "The husband thinks he can solve it all, the wife is fed up, and the contractor is going 'hehehe.' The client loved it." In virtual reality, the couple, of course, try out various options beforehand, without committing to a disastrous color scheme or ill-fitting marble counter. "So it's a science fiction prototype," Popper says, "and the client hands this to Lowe's board. Literally the board of this Fortune 50 company. And they said, 'Let's figure out how to make this real.' So we rapid prototyped three versions, and the first one was built. From sci-fi to reality in 18 months, just like that." The project resulted in Lowe's rolling out its Holoroom to about 20 stores in 2015. The concept has since been developed into an augmented reality app. In 2017, *Fast Company* named Lowe's the number one most innovative company in AR or VR.

SciFutures has prototyped similar futures for Hershey's (edible 3D printing), Ford (the future of car ownership), and Visa (the transactions of tomorrow). Few of the stories are true narratives; most are sketches of product-oriented futures. One involves a grandmother getting outfitted with a haptic VR system for her birthday present so she can feel her far-flung family giving her hugs across cyberspace. Many feel like ads set in the future. Nobody would sit down and read a volume of this work, and Popper knows that; it's not the point. He's mass-assigning the same speculative prompt to dozens of writers, selecting for best futures, and harvesting the results for IP.

Johnson calls dystopian prompts threat-casting. Recently, he worked in collaboration with stakeholders including the U.S. Army Cyber Institute, Citibank, the NYPD, and Cisco's own Hyperinnovation Living Labs (CHILL) to develop "Two Days After Tuesday," a graphic short examining a scenario in which the digital infrastructure undergirding our physical supply chains gets hacked. The art has a familiar anodyne corporate tint, but it's something of a remarkable document, part company threat analysis, part dystopian fiction, part fear-driven commercial pitch.

> *"In terms of stopping those futures from happening, they're spending real money and resources.*

Basically, hackers identify a weakness in a small shipping company's cybersecurity and use an A.I. botnet to hack into the greater New York port system, overwhelming the inspection system. The hackers, who are also terrorists, exploit the confusion to slip a bomb into the city. Then, well: "It's a busy morning rush hour in NYC… The terror group detonates a dirty bomb in Manhattan… the city sees massive casualties… Markets fall…," and the final page is given over to a full-screen portrait of the city occupied with tanks and soldiers and streets lined with body bags. "Chaos reigns." This is a corporate document, remember, that concludes with the Cisco logo. The section ends with: "ONLY YOU CAN SECURE THE FUTURE OF THE SUPPLY CHAIN! Stay Tuned… as Cisco, Citi, GE, Intel, and DB Schenker battle to save the world's tomorrows."

As a result, "Cisco ended up coming with five different business ideas and put a quarter of a million dollars into developing those businesses," Johnson says. "In terms of stopping those futures from happening, they're spending real money and resources."

The military, which was involved in "Tuesday," is perhaps the largest organization reliably spending real money and resources on science fiction prototyping. (This isn't new: Winston Churchill credited H.G. Wells with "coming up with the idea of using aeroplanes and tanks in combat ahead of World War One." Ronald Reagan's Star Wars initiative was guided by (and publicly lobbied for) Robert Heinlein and Jerry Pournelle, two of the genre's most hawkish writers. In 2016, hoping to help its leadership prepare for a future with an unknown portfolio of threats, NATO's Allied Command Transformation commissioned SciFutures to produce an anthology of stories about the near-future of combat, called *Visions of Warfare: 2036*. A sample synopsis: "A child cyber-soldier fires missiles from thousands of miles away while being pursued by a NATO operative trained in facial and behavioral recognition." Another: "A Chinese soldier genetically altered to emit fear-inducing hormones contemplates his role in the great expansion during an invasion of Pakistan." After each story, there's a list of questions intended to prompt discussion.

"The Army uses sci-fi prototyping as a way to get cadets and leadership to think about cybersecurity threats," Johnson tells me. "They've taken one prototype, called Hero, and they're teaching it at West Point."

These companies have found purchase at a moment when science fiction is sweeping the world. In 2018, Netflix invested an estimated $13 billion in original content, a third of it dedicated to science fiction, the company's most-viewed genre. Sci-fi podcasts, books, and online outlets are also on the rise. But the nascent industry ultimately exists because the men behind these companies (and yes, they're largely run by men) really do appear to believe in the transformative power of speculative fiction, of telling stories about the future. Like those who still write sci-fi stories today, it's something of a labor of love—with, of course, the outside shot that one of those stories will go big.

"In some sort of ridiculously overblown way, we're trying to change the world," McDowell wryly tells me. He and Popper have both left lucrative careers, one in the business of creating actual science fiction, to build their disciplines and companies. McDowell is still working with Ford to evolve and imagine its reduced-car city, and he's helping doctors and educators reimagine a cancer cell as a city that can be entered and traveled through in VR. He believes he can have a greater impact here than producing, say, superhero science fiction.

> *"Worldbuilding may seem most poised to take on mainstream adoption—deep, participatory thinking about the future is something everyone could probably use more of.*

"We've created a business around explicitly using science fiction to unlock innovation," Popper says. "And we're trying to get more toward social good, not just innovation for innovation's sake. We're thinking a lot about ethics. We're vegans, for example, so we're thinking a lot about food production." I point out that the military is a major client. "But we don't do stories in which anyone gets harmed or killed," Popper says, "unless those stories could lead to *fewer* people actually getting killed in real life."

Sci-fi prototyping companies are under no illusion that they're producing the next sci-fi masterwork, a *Dune* or *The Dispossessed*. How successful their projects and visions are is up for debate—there's certainly nothing approaching a *Minority Report* in the for-profit sci-fi scene, at least in terms of cultural or financial impact. In fact, the future of this future industry itself is unclear. It's a turbulent, uncertain business, even if demand is waxing, not waning. Popper recently restructured SciFutures and reduced the full-time staff from 15 to three. He suggested that this was a tactical rather than financial decision: They had been taking on too many clients, he says, and he reorganized to allow SciFutures to spend more time with high-quality clients, rather than turning into a science fiction mill. "It could be big, though," Popper says, shaking his head, a little wistfully. "It could be."

"I am seeing more and more people and the Army and companies coming in," Johnson says. More clients are showing up at his door, and more laypeople are taking note of sci-fi prototyping. "I do it every day," he says. "I did it this morning with one of my clients. Sometimes it gets turned into a story. Sometimes a novella graphic. Sometimes it gets turned into a product."

And, of course, it's big in China. Johnson says his prototyping book has taken on a life of its own: It's used in business schools and cited in peer-reviewed journals. "It's being taught in China—sci-fi prototyping schools! Like summer programs where they teach it. In China, people will show up to meetings, they'll walk in with this look on their faces, and now I know what it means: They have a book and they want me to sign it."

Worldbuilding may seem most poised to take on mainstream adoption—deep, participatory thinking about the future is something everyone could probably use more of. And McDowell, there can be little doubt, is a true believer. He relishes the conversations, chewing over a single filament of a prospective world, sharing it with a team. He appears to enjoy the process more than most science fiction writers I know. He must—he more or less walked away from a career as the one of the most in-demand production designers in the business. During one of our last meetings, I asked him why and if he ever regrets it.

"The last film I did"—2013's *Man of Steel*—"took a year of prep," McDowell says. "We developed a new language from the ground up." They meticulously created an entire alien culture, a whole world—one that was unaware it was on the brink of collapse. "We decided it would be a feudal system that started dividing its own power…." He enters a reverie, describing in vivid detail the rationale behind his interpretation of Krypton. This is his natural state, these worlds, this *process*.

"We did all of this beautiful work," McDowell says with a sigh. "And then the movie came out and it was two grown men beating each other up."

Brian Merchant is a Writer, editor, quasi-science fictional human. Author of The One Device: The Secret History of the iPhone, editor of Terraform @ Motherboard @ VICE.
The original article appeared here: https://medium.com/s/thenewnew/nike-and-boeing-are-paying-sci-fi-writers-to-predict-their-futures-fdc4b6165fa4 and is reproduced with permission.

Signals in the Noise

25 CRAZY WAYS YOUR HOME WILL BE DIFFERENT IN 2030 ACCORDING TO FUTURISTS

THINGS ARE ABOUT TO GET MUCH, MUCH COOLER. (AND WE'RE NOT TALKING ABOUT THE A/C).

by Alex Palmer

Sure, it's impossible to predict the future. Pick a topic, ask five different futurists what the coming decades hold, and you'll get five different answers. But despite this vast range of beliefs, you can still find one thing informed thinkers kll,across the scientific spectrum seem to agree upon: The smart home of today is the Victorian farmhouse of tomorrow. (Pretty to look at, but woefully outdated.)

Yes, as augmented reality grows more practical and artificial intelligence curates every aspect of human existence, the smart home is evolving at a breakneck pace. To get a deeper understanding of where we're heading, we put together an expert panel of futurists, cutting-edge designers, and even forward-thinking real estate agents. Each and every one of them believes we're on the upside of parabolic progress. In other words, if there's one thing you can bet on about the near future, it's that your home is about to get *way* more awesome. You just may have to give it a few years.

1. SWITCHES WILL DISAPPEAR

Richard Schatzberger, a futurist and artificial intelligence designer, and the founder of futurism consultancy Maison Thirteen, expects to see a rise of what he calls "invisible technology."

"Buttons, switches, and non-entertainment screens will disappear and be replaced with full voice—and, more importantly, living pattern—recognition," he predicts. "Shouting at Alexa to turn off the lights will end, and your home intelligent assistant will have a predictive and private AI, setting up each room exactly as you love it and with what you need it for just before you enter." In short: Who needs switches when you have your voice?

2. THERE WILL BE SENSORS EVERYWHERE

We can expect to see growth in biometric-reading devices that read a wide range of behaviors, expressions, and even the emotions of the homeowner. Rather than invasive cameras and microphones, though, Schatzberger expects to see "biometric and emotional state sensors help the home dynamically adapt to you." Sure, this may call forth nasty premonitions of a Big Brother-type situation, but, as the prediction goes, these will be private and localized. "Like Apple's Face recognition, it [won't] share with the internet. It would all be locally on the chip in your phone."

3. ROBOT MAIDS WILL BE AT YOUR BECK AND CALL

The Jetsons is almost reality, with robots poised to take over our household chores and other mundane tasks—potentially with their own personalities, as winning as Rosie the Robot Maid. That's the possibility suggested by a team of MIT scientists, at least, who developed a VirtualHome system that can do household activities, such as setting the table or making coffee, by instructing "artificial agents"—virtual characters—to carry out the tasks themselves. While this concept is a long way from being widely adopted, it's not *that* far.

4. 3D PRINTERS WILL BECOME STANDARD ISSUE

"Like smart homes, 3D printing has been going on for some time, but there has been little use in a mainstream market due to the cost," says Charlie Worrall, a digital marketing executive at innovative design firm NGI Design. But with the decreasing costs and many applications, Worrall expects that homes will soon be adopting these handy tools in droves—whether to create art, furnishing, or even clothes.

5. OH, AND THEY'LL PRINT FOOD, TOO

In your kitchen, alongside the refrigerator and oven, you may soon see a 3D printer. "Ovens and cookers will exist, but they'll have smart settings and work alongside more-evolved 3D printers that can print pastry goods, confectionary,

and meat products from the 'meat culturing' station," says futurist Nikolas Badminton. "Some models will be robotic and automate the preparation of food—and you'll even be able to upgrade them with celebrity chef profiles, for a premium." That's right: your own personal Gordon Ramsay is on the horizon.

6. YOUR TOILET WILL GET AN ANALYTICAL UPGRADE

Yes, it sounds pretty gross, but toilets that analyze body waste and alert the home occupant of any medical issues or abnormalities could offer some major health benefits. As property Buyer Expo event producer Kylie Mayer explained to News.com.au, "It'll [do things like] analyzing sugar levels for diabetics. Or hydration levels. There are some really simple tests that can be done."

7. INTERNET OF THINGS WILL DOMINATE

Lisa Yong, research director at San Francisco–based product design firm Y Studios, expects to see ever-deeper integration of Internet of Things (IoT). "IoT devices will seamlessly blend into home environments in every aspect. from furniture to kitchens, bathrooms, and beyond." She expects that "the smart home will finally fulfill its potential and be really intelligent."

8. HOMES WILL BECOME INDOOR BIO-SYSTEMS

Yong also expects the energy efficiency of homes to be supercharged in the years ahead as a combination of smart tech, green architecture, and building materials help to turn the home into a bona fide indoor bio-system. "The physical space itself will be functionally eco-friendly, whether it's using indigenous building materials that suit the location, to design details in venting, air flow, 'biowalls,' and beyond," she says.

9. WALLS WILL BE ILLUMINATED

"Light fixtures and light bulbs will phase out," predicts Sheila Trichter, a real estate broker from Warburg Realty. "The light will come out of the wall itself. Perhaps one will run their fingers over a wall or use a remote and a section or sections of the wall will light up." This will be a combination of style preference and as a way to reduce the space taken up by fixtures, lamps, and other illuminating devices. As Trichter puts it, "many things that take up space will need to phase out as population increases and space becomes even more valuable than it is today."

10. EXPECT A RISE IN DISASTER ROOMS

Think: *Panic Room* meets an old-school storm cellar. As natural disasters grow both more commonplace and catastrophic, homes will increasingly embrace truly safe spaces that can handle extreme weather or even bomb blasts. "The main features would be fire and wind resistance, plus a way to communicate with 911," suggests Pablo Solomon, a designer and futurist. "Some people are even installing shortwave radio, as past disasters have shown that the cell phone network can be knocked out or overloaded."

11. THERE WILL BE DEDICATED TECH-FREE SPACES

While in-home technology is likely to get more sophisticated and ubiquitous, homeowners are also likely to seek refuge from the gadgets. Solomon expects to see more homes adding "tech-free" quiet rooms—places for yoga, meditation, or just screen-free family time. They'd include crafted throw rugs or natural wood floors and fountains—anything to help the occupant feel more connected to the natural world and free from tech, at least for a few minutes.

12. ANALOG TOOLS WILL BECOME KING

Just as the increase in technology might result in something of a backlash with tech-free rooms, Solomon also predicts that the homes of the future will also use decidedly analog tools that offer a classic design or durability to make them an attractive options.

"I actually believe more people will return to using Amish-style tools and devices that just require some muscle power," says Solomon. "As society becomes more chaotic, people will cherish their homes and heirlooms a bit more. [This might include] peelers, choppers, grinders, and even the hand-pushed carpet sweepers you used to see porters using in hotels that still work amazingly well."

Signals in the Noise

25 CRAZY WAYS YOUR HOME WILL BE DIFFERENT IN 2030—ACCORDING TO FUTURISTS

13. KITCHENS WILL MAXIMIZE SPACE EFFICIENCY

As the tiny-house craze has gone mainstream, futurists expect to see the creative approaches to storage and hyper-efficient use of space to become a more standard feature of kitchens. "In many condos and smaller homes, kitchens will resemble the galley of a yacht more than a galleria," says Solomon. While most people won't necessarily leave behind their homes for a cabin in the woods, "Kitchens will return to a smaller, more efficient, and frankly sensible style.

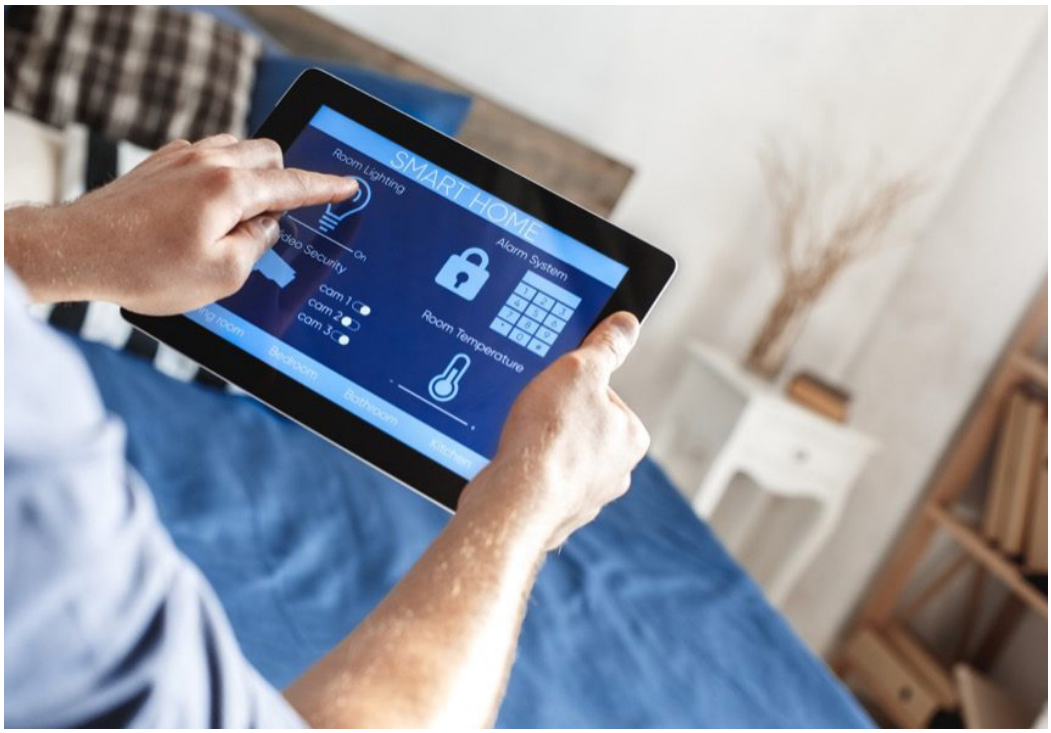
14. PARTITIONS WILL PROLIFERATE

Speaking of tiny-home innovations, the ease with which these homes can be rearranged is also likely to be adapted into homes more broadly. NYC architect Wayne Turett of Turett Collaborative expects to see homes "that are completely rearrangeable: Partitions that can easily move, or bathrooms and kitchens that can be taken out and exchanged for a new module."

He acknowledges that in some cases that may mean that buildings will have to be fundamentally different than they are today. "The buildings of the future would have to incorporate easy access for the various modules to be moved in and out, almost a like new version of the service corridors of older mansions, but in the service of maintaining homes even at the lower end of the market," he says.

15. ALEXA AND SIRI ARE JUST THE BEGINNING

Turett says that a growing number of his clients are asking about voice-activated devices, such as Alexa, Google Home, and Apple's Siri, for user-friendly lighting programming as well as for sound system integration. "Many lighting and entertainment systems can be easily controlled by an iPad or with iPhone apps, but this requires a reliable and strong WiFi connection with multiple routers in a meshed WiFi system, so we are starting to work with clients on better planning for WiFi optimization in their space as well."



16. SECURITY SYSTEMS WILL SHARPEN UP

As all the comforts of home get smarter, you can expect the protection of it to follow suit. A number of experts expect to see growing concerns with home security and smarter systems overall. "I think there will be a lot more electronic and technological deterrents for burglary," says Alex Lavrenov, a real estate agent for Warburg Realty. "It is very possible that face identification or print identification will replace your regular lock and key."

17. FABRICS WILL BECOME ANTIBACTERIAL

Just as homes will get more innovative in security themselves against outside threats, so too will they get smarter about offering protection from health threats. Alexandra Whittington, foresight director for Fast Future, expects to see a growth in the adoption of antibacterial fabrics in the home. "The latest example I've seen is a scarf that can fight contagious illness and protect the respiratory system from air pollution, for example," she says. "Home fabrics that help keep pathogens away may be important in the case of a future pandemic or the expansion of antibiotic-resistant bacteria."

18. FURNITURE WILL BE MORE ERGONOMIC

The pioneering architectural work of creators like Dutch designer Joris Laarman—who uses natural principles such as the body's ability to optimize mass in order to create works like his "Bone Chair," which was exhibited at MoMA in 2008—seems likely to become more widespread, according to some design experts. Keep a keen eye out for both this approach as well as the use of algorithm-designed furniture to grow in popularity.

19. OVERSIZED FURNITURE WILL GO THE WAY OF THE DINOSAURS

Good news, younger homeowners: soon, you'll never have to bribe your friends with pizza and beer to help you out with heavy lifting. "In previous generations, homeowners would fill their houses with large entertainment centers and dining room hutches as soon as they moved in," says designer John Linden of

MirrorCoop. "But, today's homeowners seem less interested in permanence and more excited by mobility. This is why open floor plans are so popular. People want to keep their living spaces versatile."

20. WEARABLES WILL REPLACE BIG SCREENS

Instead of a big flatscreen in the center of the living room, increasingly entertainment will shift to personal wearable devices that allow for augmented or virtual reality experiences that offer a more interactive entertainment than the current passive approach. Badminton points to the newly launched Magic Leap as a promising development, giving examples such as "Star Wars in your living room" and an interactive music experience by Icelandic sad-pop trio Sigur Rós.

21. SUSTAINABILITY WILL (FINALLY) BECOME SUSTAINABLE

While recycling and responsibly sourced materials have grown more popular in homes, expect this to be taken to the next level in the years to come. "Homes will be wholesale created from waste as the 'circular economy' gains full pace," suggests Badminton. "This will be sustainable and good for the environment." Look for alternatives to animal-sourced materials, like leather sourced from mycelium (that's the white part of fungi), as you can see made by the folks at MycoWorks.

22. YOU'LL HAVE A VIRTUAL WARDROBE

Selecting clothing might get easier than ever with the use of a virtual wardrobe which "receive the data and suggest outfits to wear each day based on the its contents and the day's forecast," as this news story describes. "It knows which items are ready to be worn because the information is automatically logged when the clothes are washed and ironed through a water-free laundry unit. Decision-making is easier than ever with a smart mirror that virtually dresses each person who selects outfits to try on."

23. AUGMENTED REALITY WILL BECOME REALITY

Expect to see augmented reality (AR) become more widespread and all-encompassing in homes. "By 2030 we'll start to see large displays replaced by interactive, multi-dimensional (visual, aural, sensory) spaces," says Brendan Tully Walsh, a trend watcher and head of marketing for network slicing company Cloudstreet. "We will no longer stare at flat displays, but rather, use AR glasses, helmets, and user-aware holographic spaces instead. The same headset will also be used when we are driving in traffic, and dare one suggest it (for some), when sharing an intimate moment with a loved one."

24. DRONE DELIVERY WILL BE COMMONPLACE

The way we receive packages and deliveries will be automated and micro-targeted with ever more precision. "In the next 12 years, autonomous long haul trucking will expand to unmanned vehicle delivery to your door, balcony, roof, or back yard," says Walsh. "If you can pin it, you name it, you can get it. With central big data systems synced to mobile edge computing drones, AI-powered orchestration between vehicles will be able to handle ever shorter and shorter delivery times and even complex instructions."

He gives the example of a pizza-delivery system that comes by drone, but then unlocks your door (with your permission, of course) and sets it right on your kitchen counter, waiting for you when you get home. "Among the key factors will the ability of multiple intelligent devices to be mutually aware and always provide the quickest path to the destination—that complex orchestration of handoffs—from an automated oven, to an automated truck, to a nearby drone, all in time for dinner."

25. SUN-IMITATING LIGHTS WILL BE THE NORM

Research has revealed time and again that natural sunlight can enhance wellbeing and life satisfaction, thanks to exposure to vitamin D. So, you can expect more homes to create lighting that is increasingly similar to natural sun (especially in areas that don't get a lot of it).

The original story appeared here: https://bestlifeonline.com/smart-home-predictions/ and is reproduced with permission.