

FUTURE NEWS

TO CONNECT, TO INFORM AND TO INSPIRE

IN THIS EDITION

It has fast become antiquated to say that you “go” on-line

The internet has become like electricity:
essential, ubiquitous and invisible.
So how should that change how we live?

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IT HAS FAST BECOME ANTIQUATED TO SAY THAT YOU “GO” ON-LINE

The internet has become like electricity: essential, ubiquitous and invisible. So how should that change how we live?

by Tom Chatfield



Credit – Getty Images

The first time I went online, in the 1990s, it felt like a journey.

If I'm driving along in my car listening to GPS directions from Google Maps, am I online or offline? How about when I'm sitting at home streaming movies on demand? Skip forward a few years: if I'm dozing in my driverless car while my smartphone screens messages and calls, do words like “offline” and “online” even make sense?

The answer, I think, is that they make about as much sense as asking me today whether I have recently had any non-electric experiences. Electricity is so much a part of our world that it makes sense to ask ‘how’ we use it – but no longer ‘if’ or ‘when’ we do. It's a given.

The first time I went online, in the 1990s, it felt like a journey. I hooked my PC up to a space-age box called a modem, linked my modem to a phone line, and carefully instructed it to dial up the Internet Service Provider who would connect me to the World Wide Web. Much beeping and bleeping later, I was online in my own home: a miracle of modernity! Or rather, my computer was online – the only object in my home, and quite possible within a 10-mile radius, that had an internet connection.

Two decades later, this vanished world sounds like a kind of joke; a primitive realm of ritualised waiting and bizarrely isolated computation. You don't really “go” online in 2016. Online is simply there, waiting. It's what happens the moment you switch your devices on; it's the default state of your office, your home, your vehicle, your stroll to the shops. We've been promised an Internet of Things for so long, now, that we've lost sight of what the phrase really signifies: a world in which the majority of digital chatter doesn't involve us at all, but consists of internet-connected devices communicating with other internet-connected devices. Drop by drop, a shared ocean of data has accumulated across our world.

Amid this global context of constantly shifting petabytes, focusing on your own offline/online status is much like obsessively observing whether the lights in your house are on or off. It's both true and largely irrelevant: a distraction from the larger question of what you are making of the network – and what it is busy making of you.

Whether you're gazing at email 20 times hourly or prefer to keep your phone switched off in a cupboard, your existence is being registered and logged. The things you buy, occupy, wear, eat, drink – all of these are developing their own persistent digital shadows. The systems that govern your work and leisure, that mediate your citizenship and opportunities: these are inescapably bound up in the information environment encircling 21st Century existence. Old words won't do. Indeed, they mislead us by suggesting that opting out remains an option – and that ignorance can come without a cost.

Consider something as simple as credit ratings. Whether you're aware of it or not, you have a credit rating: a score that helps determine whether or not you can get a mortgage, afford a contract for a mobile phone, rent a room or obtain a credit card. Someone who understands how credit ratings work enjoys some substantial advantages over someone who doesn't know they exist, or how they work. A lack of information simply restricts your freedom by hiding what is really going on.

In a thoroughly networked society, more and more systems of this type surround us. Ironically enough for those obsessed with the psychological benefits of "unplugging" from tech, switching off a phone and making yourself unavailable demands a good deal of status and control. Simply advocating "offline" time misses the point: what defines your freedom is the relationships you have with and through technology, and the degree to which you can make informed choices and negotiate systems.

The point, in other words, is that it's only by rethinking what it means to live constantly online that we can hope to take control of our lives – and address the ever-more pressing question of how we can best manage our time and attention in an age where both are under algorithmic assault. Stepping away from your computer, phone and tablet more often is almost certainly an excellent idea – but only if you can focus on a larger prize than simply recuperating the better to recharge, re-engage and repeat the same old routines.

Don't obsess with switching off. Look to the network behind your tools, and to the social practices shaping their use: how meaningfully these connect you; what it might mean to live them more richly. Our phones may or may not be on, but the world of information in which they partake is ceaseless – and ceaselessly expanding.

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***Switching off
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Credit – Istock

FUTURISTS IN ACTION

HAWAII: HEADQUARTERS OF THE FUTURE

by Laverne Leong



Hawaii is considered a global player in Futures Studies, and its experts are much in demand by governments, businesses and nonprofits. Welcome to a far-out field whose practitioners say they don't predict the future so much as help people shape it and prepare for it.

Richard Kaipo Lum has had plenty of clients that you've heard of. To name a few: the European Commission, the city of Stockholm, the governments of Canada, the United Kingdom and Singapore, along with multinationals like PepsiCo, IBM and others he isn't allowed to name. Lum has even briefed a national security team at the White House.

You may never have heard of his profession, but even if you have, I bet you didn't know Hawaii is considered a global centre of excellence in his field.

Lum is a futurist, helping governments, companies, communities, and other organizations navigate an economic, political and social landscape of increasing complexity, proliferating technology and rapid change. Some clients are small: he's worked with Kanu Hawaii and the Hawaii Community Federal Credit Union. Lately, most have been much larger.

As a profession, futures studies is taking off across the globe, as demand for futurists increases.

"Almost every nation in the world has some kind of foresight activity in their government," says Jim Dator, founder of UH Manoa's Hawaii Research Center for Futures Studies, also called Hawaii Futures.

The center "really has a pretty long-standing global presence," says Jairus Grove, the center's director, adding that there's "a real futures renaissance."

Aubrey Yee, a PhD candidate and futurist with the UH center, thinks she knows why, after decades of steady but under-the-radar work, demand is rising. "The pace of change is making people nervous. The complexity of the world, and technology, are moving at a very fast pace. Think about all the changes that have happened in the last 50 years – it's exponential. And it's big stuff that's changing, things that are fundamental. There's an uneasiness around that."

Grove agrees. "We've never been so desperate for new ideas. We now have challenges at a scale we've never had before."

If you wonder how you or your organization can plan for the future,

Grove describes the center's work as "a kind of future-proofing." "You can't actually predict the future," he says. "What you can do is put pressure on the present." To put pressure on the present, you have to envision what might happen, and where you want to end up. That's where a futurist comes in.

"Before you plan, you should dream," says UH futurist Mary "Tuti" Baker. "That is the key to resilience: to immerse yourself in, say, what might be a scary future, and to realize there is a resilience, there, within the group, to thrive."

The Ridiculous Science

Futurists are different from planners and strategists in their scope and timescale (although many futurists also do planning and strategy work). Administrators, says Baker, concentrate on the present, and have immediate, limited goals: "When they sit down in that administrative chair, they have to make sure that everything is working now. And that's good." Planners have a longer horizon (usually 5-10 years) and broader goals, but they are still operating in a mainstream realm, with set current conditions and goals that are readily apparent to everyone.

Futurists, on the other hand, have a timescale that starts where planners and strategists leave off. The working time frame of futures studies extends way over the horizon, where, by looking at certain drivers of change – political, social, economic, environmental, technological – they try to anticipate large-scale developments that are not already top-of-mind. It's not uncommon for them to think about what's going to be happening a century from now, and walk clients

through brainstorm sessions on how they can create structures and policies that will remain robust through those changes.

In other words, futurists must operate in the realm of the seemingly nutty. Dator likes to remind his students that “Any useful statement about the futures should appear to be ridiculous.” Jesse Souki, who has a master’s degree in alternative futures from the UH center and is currently the director of Planning, Permitting and Right of Way at the Honolulu Authority for Rapid Transportation, gives an example of how seemingly improbable has a habit of becoming reality: “Think about someone in the 1960s being told that we’d be using a computer on our wrist with the same computing power of a 1960s mainframe.”

“It’s easy to be silly about futures,” admits Grove. “We assume futurists are people with crazy hair, talking about things that will never happen.” But “to do the job right, you have to live way out over the horizon,” says Lum. “You’re trying to have a look at the dark spaces, trying to anticipate outcomes nobody’s worried about yet, to anticipate change before it happens.”

Lum calls it the “futurist’s curse.”

“It’s not that no one believes you, it’s just recognizing that if you are doing your job well, you are in fact always struggling to pull somebody’s attention a little farther into the future than they want to be. It’s always an effort. It’s always an uphill battle” to communicate the inherent value.

“The curse comes,” says Lum, “when what you were talking about finally becomes mainstream and everybody says, ‘Oh my God, we have to pay attention to this.’ People will be making fortunes on the lecture circuit talking about it. But you’re going to be like, ‘Yeah we were talking about this 10 years ago.’ And you’ll be thinking about something else. If you don’t realize



Richard Kaipō Lum

that as a risk of your profession, you’re going to be very frustrated,” he laughs.

What Futurists Do

Let’s get this out of the way: A good futurist will not tell you the future. They don’t know it. “A good, professional futurist is not going to talk about what the future is going to be,” says UH-trained futurist Aaron Rosa. “A good futurist should say, ‘I don’t know what the future is going to be, but we can find out about what the futures might be, and talk about what you want the future to be, and think about how we can get there.’”

Within that framework, there are many approaches. Many clients start out with what they know: they ask for a report. But there’s a problem with that method, says Rosa: The over-the-horizon nature of futures studies means that “reports just go on bookshelves and gather dust.” More active approaches work better, says Grove, including immersive experiences, interactive workshops and games.

He says the goal is to teach people a mindset they can take anywhere. “We like to work with (clients) to develop techniques that they can build into their year-after-year

process, so that report doesn’t sit on a shelf somewhere and never get used. Then, in a perfect world, they’d never have to hire us again, because they’d build futures into their own strategic planning.”

One of the most common futures techniques, in part because it can be implemented in as little as a half day, is the “four futures” workshop, an imaginative, facilitated walkthrough of four possible futures, based on parameters provided partly by the client and partly by the futurist. Under the alternative futures method, which Dator created, the futures are:

Continued Growth: All of today’s trends continue steadily into the future;

Collapse: A Jared Diamond-type scenario in which limits of growth are overstepped and the landing is hard;

Discipline: The group foresees the limitations before they are reached and takes action; and

Transformation: Technology or other factors redraw the boundaries of what’s possible.

“We want everybody to be exposed to four archetypal images of the future that are very different,” says Baker.

“Then we want to give people time to explore those and reflect. And always, at the end, there should be time dedicated to thinking, ‘OK, none of those futures is the future. But now that you have the holistic idea of what the future could be, what do you want it to be?’ That’s where the great work starts. You start making new decisions.

What is your plan going to be? It gives people a feeling of control back, a feeling that they are still in the driver’s seat.”

This is an extract of a longer article that originally appeared here:

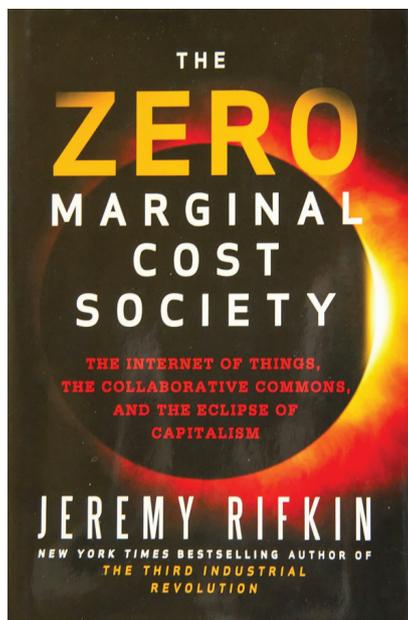
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THE ZERO MARGINAL COST SOCIETY

by Jeremy Rifkin
Palgrave MacMillan, 2014

Book Review

by Charles Brass – Chair, futures foundation



Jeremy Rifkin has been writing about the world of work and economics for over twenty years. Beginning with “The End of Work” in which he introduced the notion of a post-market era in 1999, through “The Empathetic Civilization” in 2009 to “The Third Industrial Revolution” in 2011 he has been anticipating fundamental change in the way our economy operates for all that time.

Now in this volume he concludes that market capitalism is in its death throes, and proposes an alternative – the collaborative commons.

As Rifkin himself makes clear in an afterword, he has “mixed feelings about the passing of the capitalist era” (p373).

Rifkin’s central argument is that technological developments are reducing the marginal costs of a staggeringly wide range of products and services to near zero, hence virtually eliminating the capitalist market’s potential to make profits and create conventional economic wealth. He acknowledges: “the very idea that an economic system that is organized around scarcity and profit could lead to an economy of nearly free goods and services and abundance is so counterintuitive that it is difficult to accept. Nonetheless, this is exactly what is unfolding” (p378).

After a 30 page introduction where he outlines his thesis, the book is divided into five parts. First is Rifkin’s take on the history and evolution of market capitalism. There is little here to surprise anyone who has even cursorily studied the industrial revolution.

However, the last chapter’s focus on the human dimension, particularly exploring how early economists viewed human nature is quite detailed and sets the scene for later chapters where Rifkin ponders what changes in our understanding of human nature may be emerging as capitalism dies.

The second part of the book looks at how the marginal cost of goods and services has been reducing, and explores the consequences both for business owners and for workers.

There is too much detail in these 100 pages to list all the examples Rifkin gives, but he points out that the world of the so-called internet of things (smart sensory devices embedded in almost everything and able to communicate with each other) is already reducing costs in many areas, and nothing seems likely to halt the trend.

This trend has two dimensions. First, reducing the cost of creating individual items – such as can now be done with inexpensive 3d printers, or when major universities post their courses (and their accreditation) on-line and offer education for (nearly) free. Second is the productivity efficiency gained through the expansion of interconnected networks.

It is the impact of this trend on energy systems that attracts much of Rifkin’s attention. As he says: “Renewable energy... is nearly free after accounting for the fixed costs of research, development and deployment....The creation of a renewable energy regime... distributed via a green electricity

Book Review

The Zero Marginal Cost Society by Jeremy Rifkin

internet and connected to plugged-in zero-emission transport establishes the mechanism that will allow billions of people to share energy at near zero marginal cost in an internet of things world” (p98).

Rifkin recognises that such changes profoundly challenge conventional economic wisdom, in particular requiring a rethink on how things (particularly public infrastructure) will be funded in future. He points out that if individuals own the platform (for example the internet) they will want to charge prices above their marginal cost and make a profit. On the other hand, if the public collectively owns the internet (as is the case currently, though this is under continual threat) then zero marginal cost means near zero prices and access for all.

He also recognises the impact on workers and wages, pointing out that the same technology that is reducing costs of production is making it uncompetitive to pay the sorts of wages human workers demand.

These thoughts lead Rifkin to propose a merging between the currently distinct roles of producer and consumer. He anticipates the economy moving from one class of people hiring workers to produce things these same workers then consume, to a collaborative commons through which everyone creates the communities in which they live. He calls this new group (ie all of us) ‘prosumers’.

In a concise 50 pages Rifkin sets out the history of the commons (acknowledging Garrett Hardin’s 1968 essay “The Tragedy of

the Commons” as seminal) and outlines how the concept is evolving as: “...the long-standing partnership between government and the private sector to organize the economic life of society will give way to a tripartite partnership with Commons management playing an ever-greater role, complemented by Government and market forces” (p271).

Rifkin suggests that: “...to function, every society requires a means of communication, a source of energy, and a form of mobility”(p270) and concludes that the marginal cost of providing all three of these is reducing to near zero (despite huge resistance from those who have gained the most from the historical flourishing of market economics) and that this changes our understanding of the world from a fear of scarcity to a world of abundance.

The final two parts of the book look in some detail at how a world of abundance might operate, and concludes: “The market mechanism becomes increasingly unnecessary in a world of nearly free goods and services organized around an economy of abundance, and capitalism shrinks to a niche economic realm” (p377).

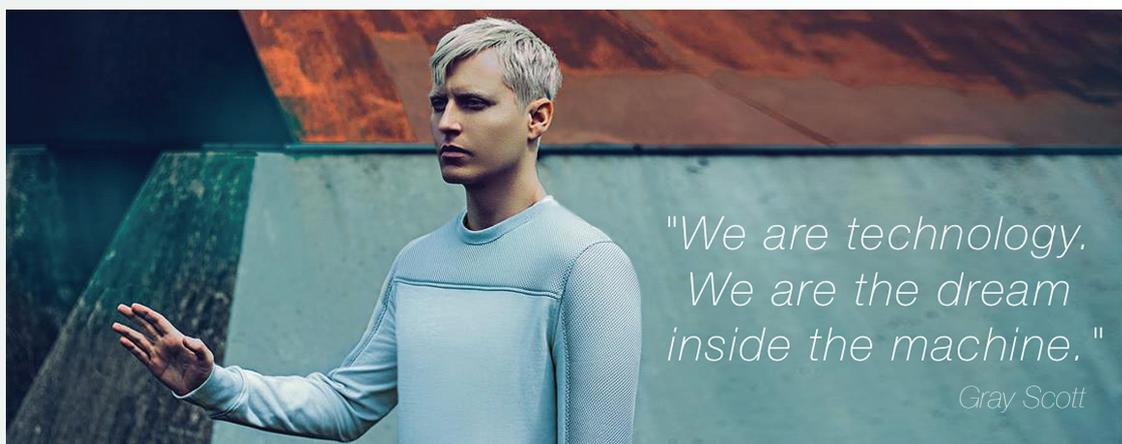
For the large number of people in the modern world who feel marginalised by our current economic system, Rifkin holds out hope for the future. His 20+ years of thinking and writing on these topics also means his hope is backed up by logic and research.

Hopefully those young people who will one day lead the world get to read this book.

Signals in the Noise

THESE SEVEN EMERGING TECHNOLOGIES WILL CHANGE THE WORLD FOREVER

Futurist, Gray Scott, will delve into these seven technologies and why they are emerging.



*"We are technology.
We are the dream
inside the machine."*

Gray Scott

When someone asks me what I do, and I tell them that I'm a futurist, the first thing they ask "what is a futurist?" The short answer that I give is "I use current scientific research in emerging technologies to imagine how we will live in the future."

However, as you can imagine the art of futurology and foresight is much more complex. I spend my days thinking, speaking and writing about the future, and emerging technologies. On any given day I might be in Warsaw speaking at an Innovation Conference, in London speaking at a Global Leadership Summit, or being interviewed by the Discovery Channel. Whatever the situation, I have one singular mission. I want you to think about the future.

How will we live in the future? How will emerging technologies change our lives, our economy and our businesses? We should begin to think about the future now. It will be here faster than you think.

Let's explore seven current emerging technologies that I am thinking about that are set to change the world forever.

1. Age Reversal

We will see the emergence of true biological age reversal by 2025.

It may be extraordinarily expensive, complex and risky, but for people who want to turn back the clock, it may be worth it. It may sound like science fiction but the science is real, and it has already begun. In fact, according to new research published in Nature's Scientific Reports, Professor Jun-Ichi Hayashi from the University of Tsukuba in Japan has already reversed ageing in human cell lines by "turning on or off" mitochondrial function.

Another study published in CELL reports that Australian and US researchers have successfully reversed the aging process in the muscles of mice. They found that raising nuclear NAD⁺ in old mice reverses pseudohypoxia and metabolic dysfunction. Researchers gave the mice a compound called nicotinamide adenine dinucleotide or NAD for a week and found that the age indicators in two-year-old mice were restored to that of six-month-old mice. That would be like turning a 60-year-old human into a 20-year-old!

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How will our culture deal with age reversal? Will we set limits on who can age-reverse? Do we ban criminals from this technology? These are the questions we will face in a very complex future. One thing is certain, age reversal will happen and when it does it will change our species and our world forever.

2. Artificial General Intelligence

The robots are coming and they are going to eat your job for lunch. Worldwide shipments of multipurpose industrial robots are forecast to exceed 207,000 units in 2015, and this is just the beginning. Robots like Care-o-bot 4 and Softbank's Pepper may be in homes, offices and hotels within the next year. These robots will be our personal servants, assistants and caretakers.

Amazon has introduced a new AI assistant called ECHO that could replace the need for a human assistant altogether. We already have robots and automation that can make pizza, serve beer, write news articles, scan our faces for diseases, and drive cars. We will see AI in our factories, hospitals, restaurants and hotels around the world by 2020.



3. Vertical Pink Farms

We are entering the techno-agricultural era. Agricultural science is changing the way we harvest our food. Robots and automation are going to play a decisive role in the way we hunt and gather. The most important and disruptive idea is what I call "Vertical PinkFarms" and it is set to decentralise the food industry forever.

The United Nations (UN) predicts by 2050 80% of the Earth's population will live in cities. Climate change will also make traditional food production more difficult and less productive in the future. We will need more efficient systems to feed these hungry urban areas. Thankfully, several companies around the world are already producing food grown in these Vertical PinkFarms and the results are remarkable.

Vertical PinkFarms will use blue and red LED lighting to grow organic, pesticide free, climate controlled food inside indoor environments. Vertical PinkFarms use less water, less energy and enable people to grow food underground or indoors year round in any climate.

Traditional food grown on outdoor farms are exposed to the full visible light spectrum. This range includes Red, Orange, Yellow, Green, Blue and Violet. However, agricultural science

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is now showing us that O, Y, G and V are not necessary for plant growth. You only need R and B. LED lights are much more efficient and cooler than indoor florescent grow lights used in most indoor greenhouses. LED lights are also becoming less expensive as more companies begin to invest in this technology. Just like the solar and electric car revolution, the change will be exponential. By 2025, we may see massive Vertical PinkFarms in most major cities around the world. We may even see small Vertical PinkFarm units in our homes in the future.

4. Transhumanism

By 2035, even if a majority of humans do not self-identify as Transhuman, technically they will be. If we define any bio-upgrade or human enhancement as Transhumanism, then the numbers are already quite high and growing exponentially. According to a UN Telecom Agency report, around 6 billion people have cell phones. This demonstrates the ubiquitous nature of technology that we keep on or around our body.

As human bio-enhancements become more affordable, billions of humans will become Transhuman. Digital implants, mind-controlled exoskeletal upgrades, age reversal pills, hyper-intelligence brain implants and bionic muscle upgrades. All of these technologies will continue our evolution as humans.

Reconstructive joint replacements, spinal implants, cardiovascular implants, dental implants, intraocular lens and breast implants are all part of our human techno-evolution into this new Transhuman species.

5. Wearables and Implantables

Smartphones will fade into digital history as the high-resolution smart contact lens and corresponding in-ear audio plugs communicate with our wearable computers or “smart suits.” The digital world will be displayed directly on our eye in stunning interactive augmented beauty. The Ghent University’s Centre of Microsystems Technology in Belgium has recently developed a spherical curved LCD display that can be embedded in contact lenses. This enables the entire lens to display information.

The bridge to the smart contact starts with smart glasses, VR headsets and yes, the Apple watch. Wearable technologies are growing exponentially. New smart augmented glasses like Google Glass, RECON JET, METAPro, and Vuzix M100 Smart Glasses are just the beginning. In fact, CastAR augmented 3D glasses recently received over a million dollars in funding on Kickstarter. Their goal was only four hundred thousand. The market is ready for smart vision, and tech companies should move away from handheld devices if they want to compete.

The question of what is real and augmented will be irrelevant in the future. We will be able to create our reality with clusters of information cults that can only see certain augmented information realities if you are in these groups. All information will be instantaneously available in the augmented visual future.

6. Atmospheric Water Harvesting

California and parts of the south-west in the US are currently experiencing an unprecedented drought. If this drought continues, the global agricultural system could become unstable.

Consider this: California and Arizona account for about 98% of commercial lettuce production in the United States. Thankfully we live in a world filled with exponential innovation right now.

An emerging technology called Atmospheric Water Harvesting could save California and other arid parts of the world from severe drought and possibly change the techno-agricultural landscape forever.

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Traditional agricultural farming methods consume 80% of the water in California. According to the California Agricultural Resource Directory of 2009, California grows 99% of the U.S. almonds, artichokes, and walnuts; 97% of the kiwis, apricots and plums; 96% of the figs, olives and nectarines; 95% of celery and garlic; 88% of strawberries and lemons; 74% of peaches; 69% of carrots; 62% of tangerines and the list goes on.

Several companies around the world are already using atmospheric water harvesting technologies to solve this problem. Each company has a different technological approach but all of them combined could help alleviate areas suffering from water shortages.

The most basic, and possibly the most accessible, form of atmospheric water harvesting technology works by collecting water and moisture from the atmosphere using micro netting. These micro nets collect water that drains down into a collection chamber. This fresh water can then be stored or channelled into homes and farms as needed.

A company called FogQuest is already successfully using micro netting or “fog collectors” to harvest atmospheric water in places like Ethiopia, Guatemala, Nepal, Chile and Morocco. Will people use this technology or will we continue to drill for water that may not be there?

7. 3D Printing

Today we already have 3D printers that can print clothing, circuit boards, furniture, homes and chocolate. A company called BigRep has created a 3D printer called the BigRep ONE.2 that enables designers to create entire tables, chairs or coffee tables in one print. Did you get that?

You can now buy a 3D printer and print furniture!

Fashion designers like Iris van Herpen, Bryan Oknyansky, Francis Bitonti, Madeline Gannon, and Daniel Widrig have all broken serious ground in the 3D printed fashion movement. These avant-garde designs may not be functional for the average consumer so what is one to do for a regular tee shirt? Thankfully a new Field Guided Fabrication 3D printer called ELECTROLOOM has arrived that can print and it may put a few major retail chains out of business. The ELECTROLOOM enables anyone to create seamless fabric items on demand.

So what is next? 3D printed cars. Yes, cars. Divergent Microfactories (DM) has recently created a first 3D printed high-performance car called the Blade. This car is no joke. The Blade has a chassis weight of just 61 pounds, goes 0-60 MPH in 2.2 seconds and is powered by a 4-cylinder 700-horsepower bi-fuel internal combustion engine.

These are just seven emerging technologies on my radar. I have a list of hundreds of innovations that will change the world forever. Some sound like pure sci-fi but I assure you they are real. Are we ready for a world filled with abundance, age reversal and self-replicating AI robots? I hope so.

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