COURSE 1

READY SET FUTURE

READING MATERIAL

Six Artifacts From The Future Of Food

By Max Elder and Adele Peters

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INSTITUTE FOR THE FUTURE

FUTURES THINKING
taught by Institute for the Future with **Jane McGonigal**

COURSE 1

READY SET FUTURE

Do you want to think about the future with more creativity and optimism? Do you want to see what's coming, faster, so you can be better prepared for disruptions and more in control of your future? Do you want to get better at changing what's possible—in your company, your industry, your community, and in your own life?

This course will introduce you to the practice of futures thinking, as developed and applied for the past 50 years by the Institute from the Future, a Silicon-Valley-based research and learning group founded in 1968. In this course, you'll build your baseline understanding of what futures thinking is and what you can do with it. You'll master introductory techniques for growing your foresight. You'll meet a range of professional futurists and learn more about how they think and research what's coming. And you'll choose one or more future topics or personal interest to investigate with your new foresight skills.

This course is for anyone who wants to spot opportunities for innovation and invention faster, and gain the skills and confidence to help lead the course of events that are changing the world, instead of being led by them.

About this Specialization

The Institute for the Future is declaring 2020 "The Year of the Future," because we believe that foresight is a human right. Every human should have the chance to develop the creative skills needed to imagine how the future can be different, and to participate in deciding what the future will be. We believe futures thinking shouldn't be something that only happens in Silicon Valley. With our specialization in Futures Thinking on Coursera, we are the first organization ever to offer massively open, free training in futures thinking. We aim to upskill the entire planet in future thinking and future making, by teaching one million online learners via the Coursera platform. This text is one of 100 free readings distributed as part of our "Year of the Future" training.

Institute for the Future

Institute for the Future is the world's leading futures thinking organization. For over 50 years, businesses, governments, and social impact organizations have depended upon IFTF global forecasts, custom research, and foresight training to navigate complex change and develop world-ready strategies. IFTF methodologies and toolsets yield coherent views of transformative possibilities across all sectors that together support a more sustainable future. Institute for the Future is a registered 501(c)(3) nonprofit organization based in Palo Alto, California.
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INSTITUTE FOR THE FUTURE

FUTURES THINKING

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Six Artifacts From The Future Of Food

From kids growing their own meat in their lunch boxes to gamifying your microbiome, these visions of the future show how we might eat in the coming decades.

BY ADELE PETERS and MAX ELDER

It's 2028. Your kids make cultured cheese in cheap bioreactors for lunch; you eat sushi made with lab-grown shark meat for dinner. Throughout the day, a sensor embedded in your intestines helps you track the health of your gut microbiome. Your kitchen appliances download a smoothie recipe and order you blueberries after using some underhanded social media to help to manipulate the market price; when you order a grocery delivery box, you pay extra for transparency to ensure food safety, but get a government discount for choosing plant-based foods. At a seafood store, you notice that digital displays have been hacked to show data about slavery in Thai fish farms.

These "artifacts" from the future of food aren't predictions, per se. For researchers at the nonprofit Institute for the Future, who created a series of possible scenarios based on signals from the present, they're meant to be tools that we can use to consider how we might prepare for future possibilities–and how we might shape the future that we want, rather than reacting to it as it comes to pass.

"When we open our minds to these types of possibilities, it allows us to better prepare for the future by addressing a lot of the challenges today in more creative ways," says Max Elder, research manager at the nonprofit's Food Futures Lab. "The images that we use to think about the future today actually often become part of the future, and so we have a really important responsibility to ask questions about who's creating these images, whose voices are included, whose aren't, who are these products designed for, and what values are built to optimize for."

Each scenario is meant to elicit an emotional response. "It's really like a first-person exercise in immersion," he says. "The question is, really, what part of these images might be something you want to create? What might you want to fight against? Would you want your children living in these futures or eating these lunchables?"

[Image: © 2017 Institute for the Future]

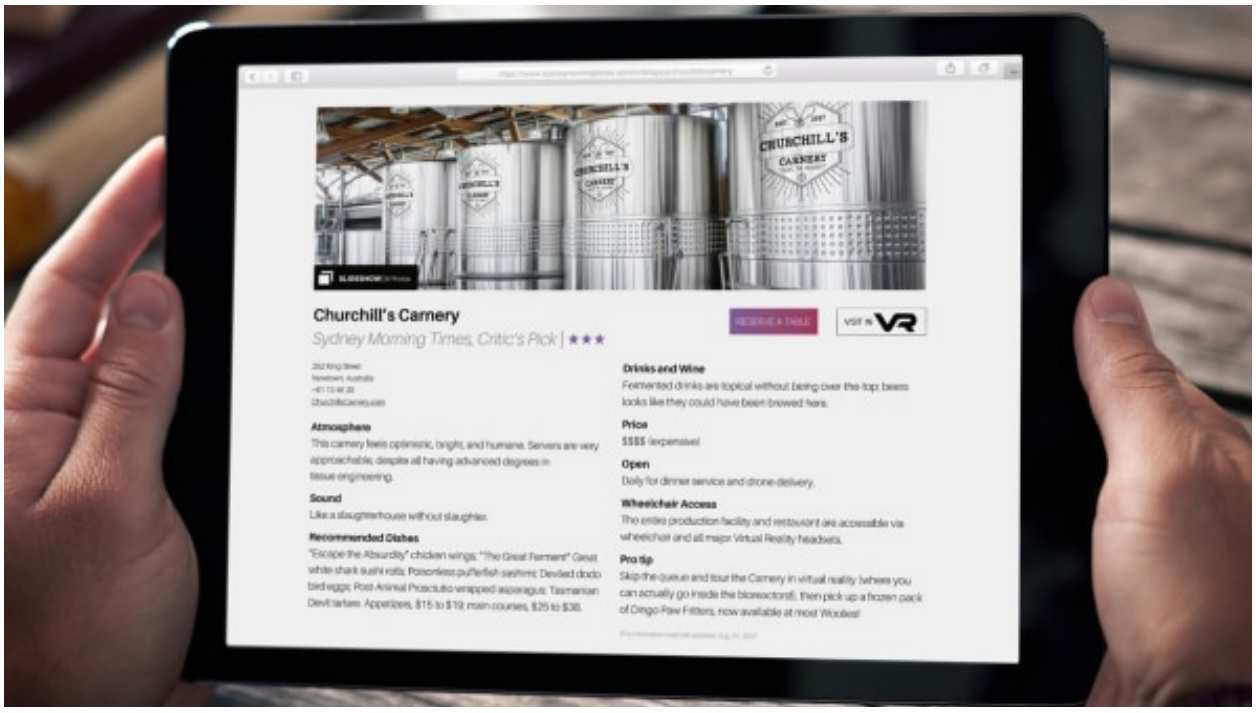
GOTTA EAT ‘EM ALL

As it becomes easier and cheaper to track the trillions of microbes living in your gut, maintaining gut health could become a game. In “Gotta Eat ‘Em All,” a Pokémon-style game, you’d use an intestinal sensor to get real-time data about your gut microbiome, and then use computer vision to hunt down foods in real life that can help you boost the diversity of those microbes. When you capture a new microbe in your gut, your score goes up.

The concept of the game is an example of a trend that Institute for the Future researchers call “scalable biodiversity”–a growing focus on biodiversity at the microbial level, which may, in turn, also impact biodiversity at the scale of farms. New studies of gut data keep revealing the uniqueness of each individual microbiome, and a corresponding variation in what each of us needs to eat to optimize health. The typical diet needs much more diversity, because a lack of diversity is linked to diseases such as type 2 diabetes and inflammatory bowel disease. As it becomes easier to track what’s happening in your own gut and see what you’re missing, that will increase demand for diversity in the food system.

While industrial-scale food production has traditionally used a sterile environment, that may change. In Italy, one major cheese producer is already changing production methods to

manage, rather than obliterate, microbial ecosystems; preserving this diversity also optimizes the flavor of the company's parmesan.



[Image: © 2017 Institute for the Future]

CHURCHILL'S CARNERY

Craving some Tasmanian devil tartare or great white shark sushi? At Churchill's Carnery–a cultured meat restaurant in future Sydney, named after Winston Churchill's prediction that we'd eventually grow chicken breasts separately rather than raising whole chickens on farms–the researchers envision people lining up to eat rare "meat" produced in bioreactors. As at beer breweries today, customers would visit the warehouse to watch as products are made.

Cultured meat or "clean meat" is already deep in development today as part of a larger shift to protein without the environmental and animal welfare problems caused by raising livestock traditionally. The cost of making a burger from cow cells, rather than a cow, has fallen dramatically. In 2017, Memphis Meats unveiled prototypes of cultured chicken and duck. The next step may be to go beyond trying to re-create meat that's available today to make food that is currently unavailable–either because the animals are rare or endangered, or because food scientists have concocted something that has never existed before.

[Image: © 2017 Institute for the Future]

CLEVER KITCHEN AGENTS

You want your “vitAImix” blender to make a blueberry smoothie–using the trending recipe it downloaded–but because everyone else is trying to make the same recipe, your kitchen can’t cheaply source the local, organic, aeroponically farmed berries that you want. The solution: you orchestrate a tweet about a fake food safety scandal involving blueberries, and the price drops. Your fridge places the order.

The long-hyped internet of things is finally manifesting itself, and as more objects come online–from livestock and crops with sensors to kitchen appliances–the food system will become more efficient and more responsive to demands and external forces like a changing climate. As data proliferates, retailers will use machine learning to automatically change prices in real time and respond to predicted future demand. Appliances, in response, will use their own algorithms to try to get consumers the best deal.

[Image: © 2017 Institute for the Future]

LUNCHABIOS

Fourth-graders in 2028 might grow their own cheese for lunch. In a concept called “Lunchabios,” researchers envision a Lunchables-like synthetic biology kit that would be marketed to children. Kids would use a bioreactor to culture cheddar, and then pair it with premade crackers and ham at lunch a few days later. A “Pro-GMO” certification on the package celebrates genetic modification, unlike GMO labeling today.

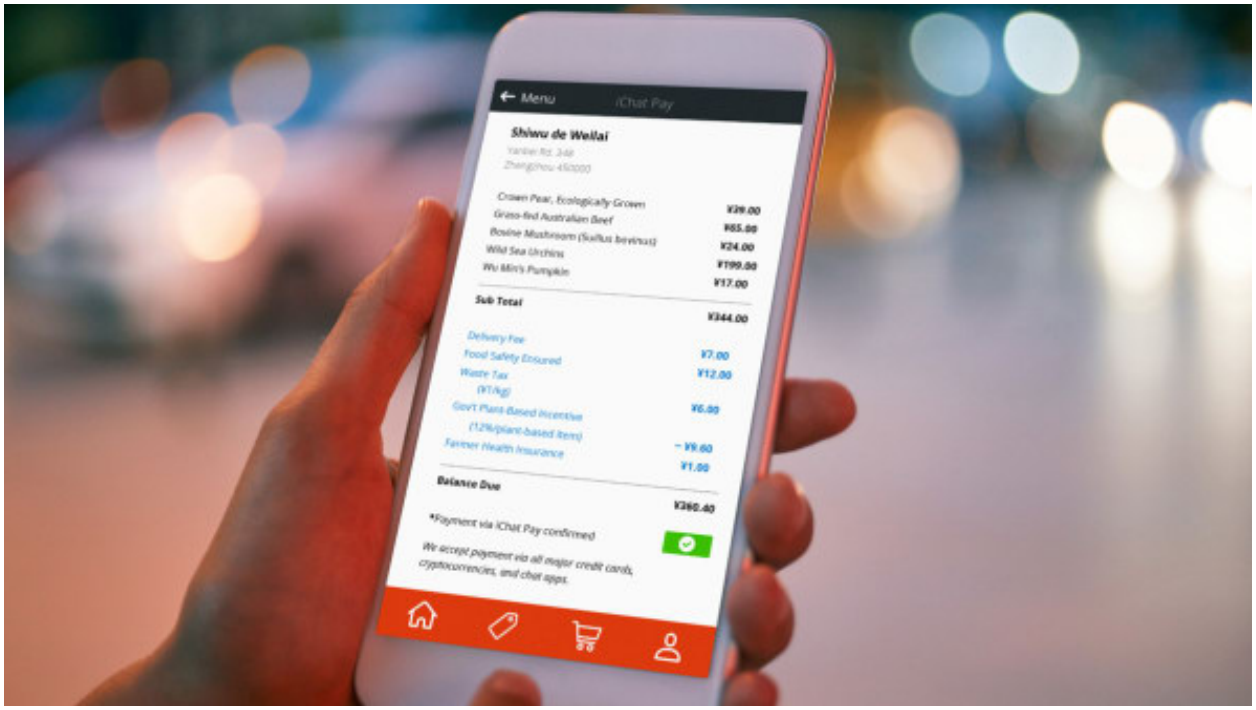
Lunchbox bioreactors are possible, the researchers say, because the technology is becoming cheap enough to make it accessible for everyone. If companies want to become more transparent about how they produce cultured food, and increase public literacy about synthetic biology, it’s likely that they’ll want to offer more hands-on experiences for consumers to try making that food themselves. It’s also likely that they’ll target children, whether or not parents support the idea.

[Image: © 2017 Institute for the Future]

SURFACE HACKERS

It's the not-so-distant future in a Seattle seafood shop, and the digital pricing displays for the food have been hacked by an activist group. Screens that would normally show the price, freshness, and nutrition of the fish now show "digital graffiti" about slave labor in seafood farms, overuse of antibiotics, and genetic modification.

The scenario is an example of the convergence of two trends. Already, thanks to Twitter and other tools, food companies no longer control the narrative about the products they create. As the range of new communications platforms grows–including digital displays in retail stores, but also technology embedded in kitchens and virtual reality simulations–there will be more opportunities for what IFTF researchers call "rewriteable narratives" about food. While some platforms can be hacked, others will be more open to consumers to begin with. Brands that are already becoming more transparent about their products might become more so, recognizing that sharing the data builds trust.



[Image: © 2017 Institute for the Future]

INCENTIVIZED RECEIPT

In China, a future food delivery box may be “curated” by food safety specialists, with an added transparency fee to help guarantee that consumers get healthy food in a marketplace where food fraud and safety issues are common. The receipt also lists a fee to support health insurance for farmers, a tax for waste, and a government-supported discount for choosing plant-based foods.

It’s one example of the growth of informed eaters; if consumers in the past didn’t know how their food was made, that is changing. In China, one company is already tracking chickens throughout their life cycle, using blockchain technology, to give consumers proof about the quality of the meat they buy. The search engine company Baidu designed chopsticks that it claims can measure the freshness of oil. Around the world, using tools like LED-lit countertop gardens, more people are growing their own food; others are helping crowdfund more responsible products like cricket protein bars. Consumers are becoming more engaged, and less passive.

Imagine A Better Future Of Food Now–Or Be Shocked By What We Get

We need to think about fantastic possibilities for the future of how we eat. After all, it's better to be scared by fiction than harmed by fact.

BY MAX ELDER

In 1995, the Martin Luther King Jr. Middle School in Berkeley, California, had an acre-sized vacant lot filled with wild weeds and cracked concrete. While others passed-by and saw neglect, a local restaurateur and activist saw an opportunity. Alice Waters knew that she could help transform children's relationship to food and nutrition if she could only give them a taste of what's possible. She created the first Edible Schoolyard on that one acre in Berkeley. Today, Edible Schoolyards span the United States because Waters dared to dream about a different future.

Unfortunately, most of us have generally stopped bothering to imagine new futures of food. Instead, we let others do the imagining, often optimizing for a limited set of values like efficiency, productivity, or financial return. As a result, our food system has become a well-oiled machine producing monoculture cash-crops and billions of animals with the industrial efficiency one would expect in a factory, not a farm. Our food has become fast, filled with addictive sugars and empty calories, instead of healthy or humane.

This gloomy picture doesn't have to be our reality. The future is not like a sunrise, something we wake up to every morning with a regularity easily mistaken for inevitability. There are many futures, each of which is full of possibility and opportunity, none of which is fated. And it's critical to think through possible futures so that we can help shape them intentionally.

Not all of these images are optimistic or utopian. The future can be scary, dark, and dangerous. But as my colleague Jake Dunagan has said, "It is better to be surprised by a simulation than blindsided by reality." It's better to be scared by fiction than harmed by fact.

We need to take back the power of imagining our own food systems. My team in the Food Futures Lab at the Institute for the Future, a think tank in Palo Alto, California recently created six images from the future of food to help provoke and inspire this type of thinking. They include blenders that tweet fake food safety scandals in a self-shopping kitchen; a Pokémon GO-like

game for achieving microbiome diversity in your diet; and Lunchabios, a do-it-yourself school lunch kit for kids to culture their own cheese using synthetic biology; among others.

Mike Lee of The Future Market also designs images of possibility: food products that don't yet exist but may in the not-too-distant future. He recently created Jia Rou Canting, a Chinese restaurant in 2038. Upon first glance, Jia Rou's menu doesn't appear out of the ordinary, but upon closer inspection, one can see that Jia Rou has cultured meat on the menu (meat grown from animal cells outside of an animal), delivers with drones, and accepts Bitcoin. Jia Rou may be delivering cultured meat to your doorstep with drones a lot sooner than 2038, aided in-part by Lee's imagination.

Shojin Meat, a citizen science project based in Japan, has also created images of Mars colonists growing protein and high-rise algae farms in 2203, among others. Nic Weidinger, artist in residence at Autodesk, developed a series of artifacts called Animals Doing Capitalism which includes a countertop meat extruder that cultures bacon, producing fat profits for living pigs who own the IP to their cell lines used. When you imagine the future of food, what comes to mind?

Perhaps you see vast networks of shipping containers filled with vertical hydroponic farms, or fully-autonomous farms, glowing greens with purple LEDs. Maybe you see climate refugees building resilience through their ability to carry their food rituals and stories with them wherever they are displaced. Or you might see a kitchen cabinet of pills, each one a unique meal ready for quick and efficient consumption.

Our images of the future often become reality. In fact, portrayals of the future of food from just a few decades ago are now surprisingly familiar. Near ubiquitous features of our modern foodscape, like meal replacements, faux meat, and genetic modification, were once but figments of our imagination.

I urge you to imagine possible futures of food, identify which futures best optimize for the values you hold, and then take the steps necessary to build those futures. We all have agency in turning the possible into the actual. Once you identify what you want the future to look like, make it happen. Change your behavior or adopt a new diet, perhaps one we'll likely see more of in the future, like reducetarianism. Vote for politicians who share your visions for the future. Talk to friends and family about these futures and their implications for yourself, your community, and your planet.

Imagining the future of food shouldn't be limited to those who work at think tanks or consulting firms. Everyone should engage in this exercise and feel empowered to take an active role in creating the future. After all, the future of food needs us as much as we need it.

Max Elder is a researcher at the Food Futures Lab of the Institute For The Future.

Adele Peters is a staff writer at Fast Company who focuses on solutions to some of the world's largest problems, from climate change to homelessness. Previously, she worked with GOOD, BioLite, and the Sustainable Products and Solutions program at UC Berkeley.

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