IN THE ROUND

The Future of Food

POPTECH x RISD

A Collaborative Endeavor

03.2019

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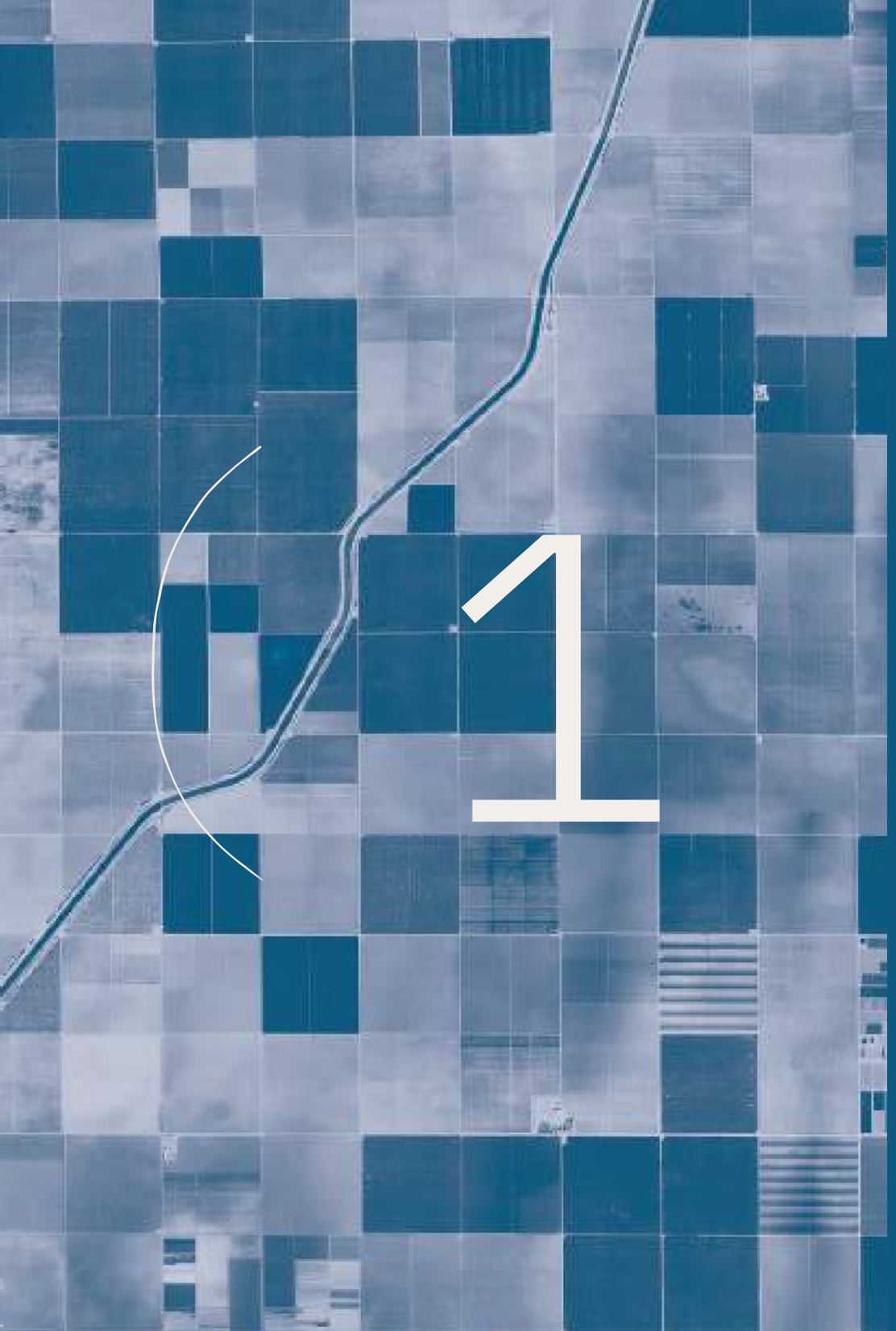

1

Introduction

CAN THE PLANET SUPPORT THE NUTRITIONAL NEEDS OF A *GROWING* GLOBAL POPULATION, AND AT WHAT COST?

THE MOTIVATING QUESTION

The global food system is among modern society's most nonlinear and complex systems. Its emergent qualities arise from many sources including fashion, public health policy, climate change, logistics, cultural shifts, demographics, and commerce to name a few. For most of us, the system is opaque; the simple act of ordering a hamburger belies the vast and complex supply chain that made it possible to sell the product for $2 or less. Even "farm to table" food systems—ostensibly simple—rely on technologies and infrastructures unimaginable a century ago, let alone at agriculture's origins.

There can be no single answer. The diversity of preferences and expectations held by individuals, communities, nations, and cultures demand a similarly diverse understanding of nutrition and food security. The response to this important question will be realized differently according to a wide spectrum of contexts and conditions. To describe the future of food is to describe the future of humanity.

A more manageable question about the future of food would have its locus in the instruments of food production, drawn broadly as farming. Farming is perhaps humanity's most ancient technology to be realized at scale. In many parts of the world, farming still closely resembles its distant origins. But farming has changed many times over the millennia and today is undergoing a radical technological transformation; perhaps its most significant since the Agricultural Revolution 10,000 years ago.

*"Today, humanity faces an existential question about how we will feed **3 billion more** people in the next few decades. At what cost to the planet, social, and economic systems will that obligation come?"*

The Agricultural Revolution is popularly understood to be human-

kind's first entry onto the global stage; its most important step to becoming the dominant species that we are today. The Agricultural Revolution fits nicely into our narratives of human progress and innovation that shape how we understand ourselves as a species and view technology. But as with many things, this narrative is problematic. As Yuval Harari writes in Sapiens:

Foragers knew the secrets of nature long before the Agricultural Revolution, since their survival depended on an intimate knowledge of the animals they hunted and the plants they gathered. Rather than heralding a new era of easy living, the Agricultural Revolution left farmers with lives generally more difficult and less satisfying than those of foragers. Hunter-gatherers spent their time in more stimulating and varied ways, and were less in danger of starvation and disease. The Agricultural Revolution certainly enlarged the sum total of food at the disposal of humankind, but the extra food did not translate into a better diet or more leisure. Rather, it translated into population explosions and pampered elites. The average farmer worked harder than the average forager, and got a worse diet in return. The Agricultural Revolution was history's biggest fraud.

"The Agricultural Revolution certainly enlarged the sum total of food at the disposal of humankind, but the extra food did not translate into a better diet or more leisure."

The first Revolution profoundly reshaped our societies, families, diets, governance systems, and our conceptions of nature and time. Before we embark on a next Agricultural Revolution, it is important that we understand not just how this will unfold, but how and why it would benefit humanity. We must attempt to forecast what the new outcomes will be.

How much time do we have? Do we have a choice?

Existing & Emerging Conditions

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The structural determinants of race, wealth and demographics are core drivers of an inequitable food system that places cheap, subsidized food in poor neighborhoods that are reliant on a charity model of soup kitchens and food pantries. In the United States, we produce enough food for the entire population yet thousands suffer from hunger. An equitable food system must be based on **availability**, **accessibility**, **affordability** and **accountability**.

Karen Washington

Farmer, activist, resident of the Bronx and co-owner of Rise & Root Farm in Chester New York.

6 A's

Over the course of the convening, it became clear that many participants had 3 or 4 "A's" in their model of an equitable food system. Though they overlapped, they weren't all the same. We counted six, in total. **If food is an essential human right, it must be:**

1 Available

Are there enough bananas?

2 Accessible

Can I get to the store? Are the bananas there?

3 Affordable

Can I pay for the bananas?

4 Accountable

Are the bananas safe? Am I not wasting them?

5 Acceptable

Do I like bananas?

6 Supportive of Individual Autonomy

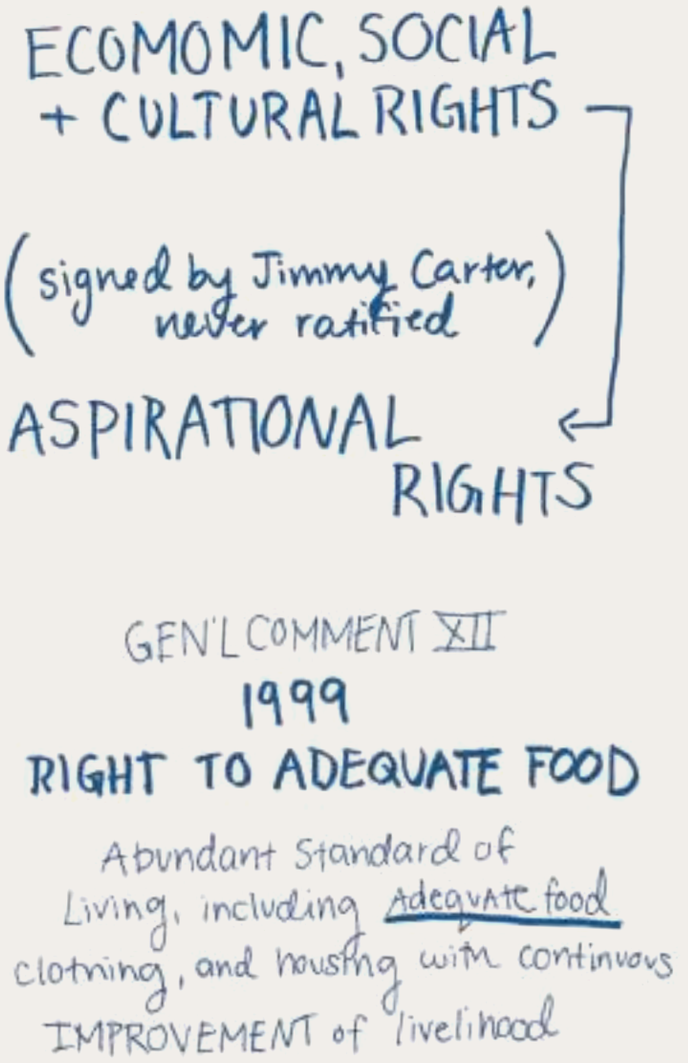
Do I have the choice to buy oranges?

EXISTING

Traditional business models focus on profitability in one part of the supply chain.

EMERGING

Consumer demand for transparency and traceability is shifting business models and supply chains.



The current agricultural revolution is placing big bets on the sci-fi of food science—the power of marrying traditional agricultural practices with synthetic biology to optimize microbes to advance agricultural production. The application of advanced technologies has the potential to enhance crop production, provide more natural forms of protection against pests and enhance the nutritional value. Disruptive innovation at this level moves faster than the regulatory world and has at its core intellectual property that will have to be protected in order to maintain a sustainable investment flow.

Mike Miille

Chief Executive Officer at Joyn Bio LLC

EXISTING

The use of technology has been focused on delivering yield at **scale.**

EMERGING

Mobile and agile technology have the promise to support local knowledge and communities—yield **dispersed.**

In a highly litigous context, Big AG will pull out of consumer markets and move to controllable, professional markets.

At the same time, one strand of the open-source agriculture movement is working to link strong data analysis with cultural knowledge.

EXISTING

Hunger is approached as a public health problem that can be solved by experts who can dictate and deliver what people need.

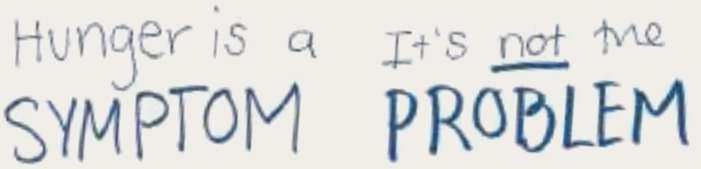
EMERGING

People will eat what is meaningful - hunger and food is a cultural phenomenon.

Every county on the planet is dealing with a malnutrition issue. Obesity is epidemic and malnourishment is rampant. A rise in global earnings has not correlated to a more nutritious diet, rather an increase in the consumption of highly processed foods. The narrative needs to change – instead of looking at global food security, we need to address global food and nutrition security. **It's not about feeding the future; it's about nourishing the future.**

Kimberly Flowers

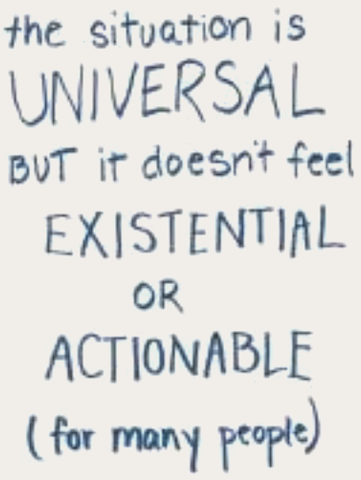
Director of the Global Food Security Project and the Humanitarian Agenda at CSIS



Food is a part of daily life for every human, yet most feel removed from the process of food production and the sustainability of what they eat. There's lots of talk that we need a moonshot to solve the challenge of ensuring adequate food and nutrition for a growing global population, yet the food system is complex and dynamic and is unlikely to be solved by an approach that may be better geared to a more static and predictable challenge.

Sam Fiorello

Chief Operating Officer and Senior Vice President for Administration and Finance of the Donald Danforth Plant Science Center



EXISTING

Our narratives around hunger have focused on quantifiable results.

EMERGING

Food is everyone's story.

EXISTING

Organizations could afford to be narrowly focused on sector solutions so long as the system remained stable.

EMERGING

Climate change makes food production more erratic and dynamic and requires a more cross sectoral approach.

Big agriculture is not a consumer-focused industry, yet one of the biggest shifts we are seeing among new agtech start-ups and the venture investments behind them is a shift to consumer audiences. We have the capacity through technologies such as gene editing and other types of scientific advances to accelerate crop hardiness and production. With such advances, the big question will center on what defines best practices and trust in those practices. Perhaps the greater question is, **"Does the private sector have a role to play in global food and nutrition security and how do we instill public trust around private sector integration?"**

Natalie DiNicola

Chief Communications Officer for Benson Hill

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What's Needed For the Field

A SHARED NORTH STAR;

A SET OF GUIDING PRINCIPLES;

A MAP;

A MODEL FOR IMPACT;

GALVANIZING STORIES.

A Shared North Star

Why?

A **North Star**—*not a moonshot*—organizes and guides our efforts towards a larger goal, gives us a strong purpose, and catalyzes new lines of work. “Moonshot” is too broad and too invested in and reliant upon societal norms.

Organizations have been focused with religous fervor on their sector solutions—instead, we need someone to mind (and share) the north star, to organize frameworks that activate different communities, and to enable collective agency.

Guiding Principles

Why?

You can’t turn the food system off, reconfigure it, and start it up again. You need to develop and shape it while it is running.

A wide array of micro decisions made the food system we have now, and a wide array of micro decisions will shape our future food systems — but those decisions cannot be made in isolation and ignorance – they need a guide.

A Map

Why?

We need a map to visualize the system, identify what we know and what we do not know. The act of mapping should help us answer these essential questions identified by the mission working groups:

Do we know where to intervene?

What action will change the status quo?

Do we need a catalytic move?

Can we start local at a small scale?

Do we need an outside catalyst?

How can people trust their own decisions?

Can industry make a relevant, believable commitment?

How many prongs are needed?

How do we provide info that consumers—or other stakeholders—want?

What tool do consumers [or other stakeholders] need to share action and information?

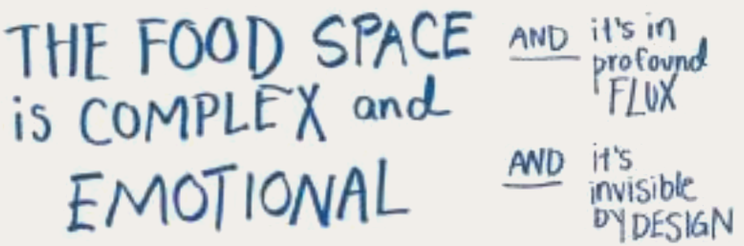
What is our index to measure progress?

Can such an index spur/support innovators?

A Model of Impact

Why?

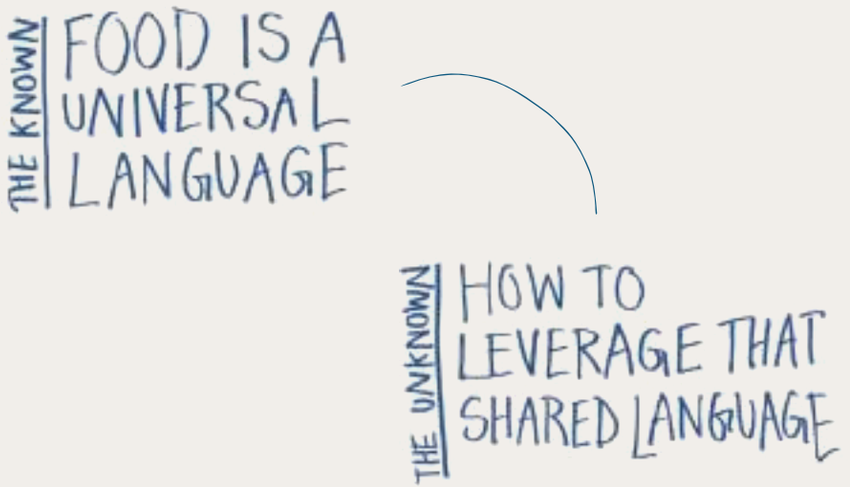
In order to develop a shared theory of change and clarify our area of focus, we need to understand and be able to articulate how our proposals will lead to a better world. We need to know who will be helped and who will need to adapt or adjust to a new way of doing things. We need to be able to talk honestly about the benefits and the costs.



Galvanizing Stories

Why?

People rally behind causes and specifics, not broad principles. We need ways of bringing our lofty ideals to the ground, to meet people where they are, and to make our highest aspirations feel real, present, and achievable. Stories help with that.



Recognize that ultimately we'll need to change the way we understand storytelling — not as a delivery of information, but as a way to find action and real benefits.

Our Plan to Move Forward

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EARLY DESIGN PRINCIPLES FOR CONSIDERATION

Design principles enable decision-making and action into the future, provide cognitive architecture, and are created by people—not natural laws. Good design principles are strong enough that they provide inspiring frameworks.

They should be clear enough that they shape our decisions, but flexible enough that they remain relevant in a changing context. We've begun to develop some principles and need to do more to clarify, refine, test, and articulate them.

From the Mission Teams

A food system that feeds a healthier planet must:

- Develop a 10 value system that we believe the food system should represent
- Amplify voices/forces
- Equitability
- Sustainability
- Nutrient density
- Focus on the universality of taste to help rebuild trust.
- Make plant-forward diets more desirable
- Create an independent standard setting organization (beyond the big 4)
- Broaden circle of decision makers
- Create a wider network of stakeholders. For example, connect with health and life insurance.
- More transparency in scientific studies, in marketing, and in institutions.
- Demand corporate accountability and encourage individual prosocial behavior
- Think about incubators

Design principles enable decision-making and action into the future

From the Synthesis

A food system that feeds a healthier planet must:

- Assert that all humans are entitled to equitable access to healthy and nutritious food.
- Equitable access suggests its available, accessible, affordable, enables autonomous choice and is culturally acceptable.
- Respect individual health and wellness.
- Value diversity (of culture, of taste of choice, of biological systems) in all its forms.
- Create open, innovative systems. Systems that are adaptable, enable experiments and interim measures.
- Be guided by science.
- Recognize the importance of both global and local communities
- Render the system, and the acts of its participants, visible and therefore accountable.
- Ensure transparency and traceability for consumers and producers

Next Steps

Attempting to undertaking the complexities of the food system is a bold move. There is no shared definition of what it means to create an equitable food system; the notion of "food" touches on deep-seated individual and cultural passions; and if you change one little bit of the food system, it has ripple effects throughout. Acknowledging these truths, we did not set out to create solutions, rather we devoted our time to exploration - a process that allowed us to assess, discover, reality-check and strategically plan the next phase of the journey.

While short in duration, our opening exploratory of the guiding question: How will the planet support the nutritional needs of a growing global population, and at what cost? provided a rich environment to debate what it means to not only feed but also nourish current and future residents of the planet. We discussed the need to ask what communities want (particularly those subjected to the inequities of race, income disparity and geography) versus what they need, shifting the conversation from one where communities operate from a place of vulnerability with little input into solutions to one that empowers participatory solution development. We surfaced more questions than answers. We respectfully agreed to disagree. We created the nucleus of a network that has a high potential for ongoing collaboration, expansion and impact.

"We devoted our time to exploration—a process that allowed us to assess, discover, reality-check and strategically plan the next phase of the journey."

Over the course of our discussions, two areas of potential impact surfaced. One of the greatest challenges in reaching solution development around the establishment of an equitable food system rests in the fact that a single shared definition of the challenge does not exist, yet there is high potential to develop guiding principles that can serve as the undercarriage of an equitable system. The spaces that fuel the larger domain of global food security - venture and philanthropic investments, food distribution, access to technology, transparency around intellectual property and patents, as well as policy doctrine are often a picture of duplication of effort on one hand, and a total lack of access to resources, both intellectual and monetary, on the other. Despite this reality, there is no map/data visualization of the global food security ecosystem. We see high potential in focusing on the development of guiding principles that help define an equitable food system, as well as the establishment of a map that identifies areas of scarcity, abundance and redundancy across the entire space.

OUR PLAN TO MOVE FORWARD

In the coming months we will continue our work in the following ways:

- PopTech will convene members of our network nucleus in August 2019 to define and prioritize our next steps.
- PopTech 2019 thought forum will feature a session on the Future of Food
- PopTech will serve as the hosting organization for ongoing work growing out of the Future of Food Exploratory.
- PopTech will provide periodic updates and calls to action through its social media channels and newsletters.
- PopTech and the RISD Center for Complexity and Industrial Design Department are committed to an ongoing collaborative partnership to foster this work.
- RISD is integrating work on the Future of Food across a number of departments including 1) A Special Topics Studio about the future of food, for RISD Industrial Design undergrads and graduate students; 2) Future of Food will be one of the Center for Complexity's core Challenge Studios for at least the next two years; and 3) Food will be in the rotation of topics for the Strategic Design program.

We encourage new members to join our network. Inquiries for more information or partnership opportunities should be addressed to FOF@PopTech.org.

DIRECTION MAP

Concentration → Dispersion

Processed → Natural

Specificity → Diversity

Centralization → Decentralization

Global → Local

Hi-tech → Lo-tech

Corporate → Individual

Indifference → Pride

Distrust → Trust

Broadcast → Storytelling

Cost → Affordability

Appendix

5

Participants

Jon de la Para Harper

Principal Research Scientist, *MIT* and Director of the OpenAg Initiative, *MIT Media Lab*

Chase Sova

Senior Director Public Policy and Research, World Food Program, USA

Hari Pulapaka

Chef and co-owner of Cress Restaurant, as well as tenured associate professor of mathematics, Stetson University

Jak Knowles

VP Venture Investments, Bayer

Jenneffer Pulapaka

Podiatrist, restaurateur, sommelier, advocate and podcaster. Co-owner Cress Restaurant

Jane Black

Food Writer, Washington Post, WSJ, NYT

Karen Washington

Farmer and community activist, co-owner of Rise & Root Farm and co-founder of Black Urban Growers, as well as a recipient of a James Beard Foundation Leadership Award

Kimberly Flowers

Director Global Food Security Project, CSIS

Natalie DiNicola

Chief Communications Officer, *Benson Hill*

Daniel Hewett

Executive Director, Research, Practice and Inquiry, RISD

Maureen Mazurek

Director of Communications, NewLeaf Symbiotics

Michael Miille

CEO, Joyn Bio

Mitchell Davis

Chief Strategy Officer, James Beard Foundation

Patricia Risica

Associate Professor of Behavioral and Social Sciences and Epidemiology at Brown School of Public Health, as well as President, Rhode Island Public Health Association

Raj Gollamudi

Managing Partner, OnePrime Capital, as well as Chair, PopTech Board of Directors

Robyn Metcalfe

Founder, Food + City

Robert Lawrence

M.D., Professor Emeritus, Bloomberg School of Public Health, Johns Hopkins University, Johns Hopkins Center for a Livable Future

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Maddie Woods
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Role | *Publication Design*

Why POPTECH?

For nearly a quarter of a century PopTech has championed cross-sector convenings as a way of surfacing new conversations around complex challenges. The energy and potential of these convenings stems from PopTech's belief that diverse networks of expertise have the potential to drive solution development more quickly and efficiently than an individual, organization or institution acting alone or within their designated area of expertise.

Why RISD?

The mission of Rhode Island School of Design, through its college and museum, is to educate its students and the public in the creation and appreciation of works of art and design, to discover and transmit knowledge and to make lasting contributions to a global society through critical thinking, scholarship and innovation. The Center of Complexity is specifically building on the tradition to question "how" tradition. The center is a collaborative platform for cross disciplinary work.

Structure

The Future of Food Exploratory took place over two days in Providence, RI. It was a discussion in the round hosted at the Rhode Island School of Design by PopTech and the Center for Complexity. Participants were invited with an eye towards diversity of discipline. We invited community leaders, agri-tech startups and policy people, local activists, and global aid administrators, and many other important voices in the food industry. The far-reaching conversations were held under the Chatham House Rules.

What are Chatham House Rules?

"When a meeting, or part thereof, is held under the Chatham House Rule, participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed."

Why In The Round?

Conversation-in-the-round offers an experimental and collaborative forum so perspectives across industries and disciplines collide to rethink how we should approach navigating complex challenges. As an institution rooted in creative practice, RISD offers a third-space to explore the how, in-between the formal and informal, public and private, temporary and permanent.

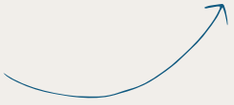
Before the end of the convening, we hoped to accomplish the following objectives:

1

Create and solidify the nucleus of a network that has the potential to collaborate and expand over time

2

Identify areas of focus that have potential for rapid solution development & impact



3

Acknowledge work already underway in the field to avoid duplication of effort.

4

Identify clear next steps upon departing this convening, and share our work across sectors.

Run of Show

The event consisted of four main sessions. The first two were open conversations in the round—a facilitated discussion with everyone in a circle. Each session was kicked off by a pair of short provocation talks. The final two sessions moved into breakout groups and more intensive work periods.

Dimensions of the Nth Agricultural Revolution

Sam Fiorillo and Karen Washington were asked to begin the discussion portion. Sam and Karen were paired together as both have worked tirelessly in opposite business models. Karen, a grassroots activist, is concerned with humanitarian agricultural issues whereas Sam, a COO, is concerned with researching plant science in order to solve nutritional issues through technology. These two opposing philanthropic perspectives were intended to create and provoke a holistic discussion pertaining to technology, nutrition, and humanity.

Disruptive Interventions & Platforms

Mike Miille and Natalie DiNicola led the second round of provocations: Disruptive Interventions and Platforms to Seed and Speed Progress. Both Natalie and Mike aim to aid sustainable development and nutrition initiatives within biotech. Participants were challenged to think of how technology can be used to progress nutritional security.

Teamwork & Breakout Sessions

It is common in this type of work to talk about 'moonshots'. But what was the moonshot? A high level goal that was split into many missions, each of which required hundreds of tasks and projects to get done. With that in mind...

Teamwork

Participants split into groups to draft mission proposals:

1. Define what your mission is and identify: what are the little things that have to happen?
2. Work together to create a portfolio which builds upon one another
3. Come up with ideas that are actionable, novel and not representing redundancy.
4. How do we aggregate all those microsuccesses into one macro success?

These proposals helped identify different stances

1. Take Back Your Food: Local control of food & food sovereignty
2. Invert current ratio of processed food to healthy food
3. Create a food system that optimizes for: Nutrient Density, Sustainability, & Equity.
4. Let's Close the Gaps: Values to help innovation and destruction be applied in positive ways.
5. Improve trust in the food system
6. Social media platform to encourage prosocial behavior

Design principles

An even larger more preliminary list of design principles extracted from the conversations

- Collaborate with regulatory institutions while maintaining agency of smaller participants in food system.
- Work towards accessibility, whether free or open source, with sustainability in mind.
- Invest in public trust of larger institutional food players.
- Use education as a tool to help consumers (citizens? People? ...) understand technology and policy. -- through schools teaching of nutrition + provision of healthy meals
- Change the narrative to mirror the needs of the partner at hand? (Community would be nourish v feed)
- Encourage robust ecosystems with varying divisions of power rather than monopolies
- Don't lead with food, but lead with wellness (re: food as medicine)
- Question the role of optimization as it relates to your intended impact and its effect on consumers.
- Demand and provide transparency and traceability.
- Be skeptical of the moonshot, but be aware of the need for substantial change.

- Aggregate your microsuccesses to mount into a global macro-success.
- Recognise/Understand food as a human problem
- Reduce reliance on processed (ultra processed?) food.
- Focus on nutrition, not yield.
- Micro nutrition? Nutrients? Micronutrients?
- Work across scales.
- Culture first, technology where appropriate
- Sustainability
- Environmental, Cultural, Commercial
- Be courageous and bold in terms of peeling back a system
- Make good food patriotic
- Take small steps but coordinate them
- Adequacy, Availability, Acceptability, Accessibility
- Reframe the food system in terms of dignity
- Move in a better direction
- Help or get out of the way
- Incorporate the voices of the people it affects most
- Before we can think about technology, we have to think about dignity
- Find galvanizing stories
- Take advantage of the universality of food
- Admit to ourselves that we could be doing wrong

Design principles, cont.

- Find ways to incentivize better behaviour in companies
- Incentivize more fortified or more healthy food options.
- Support basic research open to all
- Reduce reliance on meat protein
- Relink food consumers to food production
- Teach people where their food comes from
- Make supply chains more transparent to interested consumers
- Find and tell authentic stories
- Rebuild trust with authentic stories
- Support gene editing at scales smaller than the big 4
- Design WITH not FOR
- Make sure everyone is eating healthy
- Treat food as medicine
- Don’t just treat food as medicine
- Democratize gene editing
- Democratize food tech
- Earn public trust
- Focus on nourishing not feeding
- Lead with wellness
- Design for healthy flavours

Errors of Omission

An even larger more preliminary list of design principles extracted from the conversations

- Malnutrition
- Diet—quality & precision
- Impact of regulatory envornment for global change
- Food sector + climate change; planetary health
- Identifying scale
- Structure stakeholders outcome across sectors
- Rural supply chain
- Next generation of farmers