

# Conclusion

## *Future Food Imaginaries of the Public*

If the Center for Food Integrity delivered more of the same “anti-politics machine” even as it pushed the food industry to communicate with the public in new ways, what about the people who set out to radically disrupt and transform the food system itself? Did innovators and entrepreneurs promising to revolutionize the food system with novel technologies and Silicon Valley-style approaches to business also rethink how to communicate with the public about the food system? How did they imagine the public and understand the role of communication? To explore these questions, let us look briefly into the most vibrant arena of the food tech sector, alternative protein innovation, and focus on one of the most headline-grabbing, hype-generating, and investment-attracting companies in this space: Impossible Foods.<sup>1</sup>

“Building the Food System of the Future Through Next Generation Products,” one of many sessions at the two-day Future Food Tech Summit held in San Francisco in 2019, began with the moderator addressing the founder and CEO of Impossible Foods, a company that aimed to “disrupt” animal agriculture by making “raw meat” from plants: “You’ve made something

exactly the same out of something not exactly the same—not a theory of change, but a change of theory.” Prompted to explain how he came to this breakthrough, Pat Brown, who had been a professor of biochemistry at Stanford, said that he asked himself what the most important problem in the world was that he could contribute to solving by means of basic biomedical research. He decided that “by a huge margin the biggest threat we face and maybe have ever faced is the catastrophic use of animals in the food system,” but there was no way people were going to change their diets. After all, he noted, steak was served at the Paris climate meetings, and nothing changed after China asked its population to cut back on meat consumption. So Brown set out to deliver the meat people wanted “without the carcass” by replacing “the old technology” (animals) with something new. The discussion, which included four other panelists, eventually turned to regulatory processes, and Brown reflected on how his company was navigating its use of “heme,” a genetically engineered protein credited with making the plant-based burgers look, taste, smell, and even “bleed” like meat. In addition to working closely with the FDA to go through a full review process rather than claiming GRAS status for heme, Brown explained that the company made a point of telling the public they use engineered yeast to make the product, because “transparency is the magic ingredient to winning the confidence of the public.”

About a year later, during a webinar called “Using Microbial Technologies to Revolutionize Our Food System,” also put on by Future Food Tech, then vice president for research and development at Impossible Foods, Ranjani Varadan, both discussed and demonstrated the company’s approach to transparency, which involved simplified explanations of how heme was made emphasizing its naturalness, familiarity, and safety, as well as the

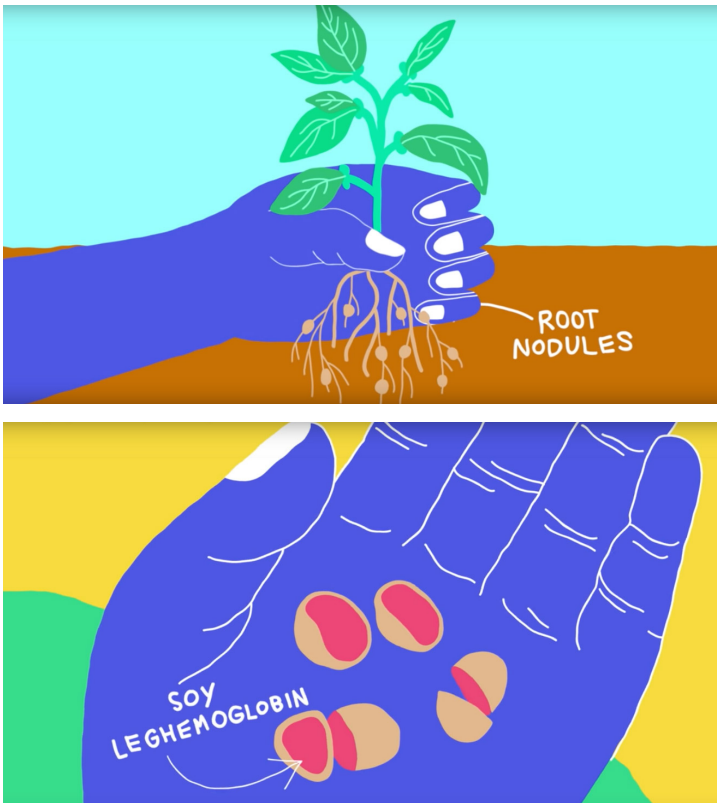


Figure 14. Ingredients of Impossible Beef made familiar and natural; heme is represented by a soy plant with dirt still clinging to the roots. Source: Impossible Foods, <https://impossiblefoods.com/nz-en/products/beef/340g-pack>.

company's commitment to the public good. For example, one slide showed an image of the roots of a soy plant as found in nature alongside text explaining, "Heme is a ubiquitous ingredient in nature. Plants have heme, too[,] . . . but extracting lehemoglobin from root nodules at scale is not sustainable." Another slide showed all the ingredients of an Impossible Burger as if laid out in a home kitchen, each labeled using familiar words linking it to a natural source, for example, soy protein as a soybean pod, coconut oil as a coconut, and heme as a soy plant root with dirt still clinging to it (Fig. 14). During the discussion Varadan fielded a question about how her company was responding to the growing need for clean labels. She acknowledged that "consumers are getting more and more savvy" and explained that Impossible's

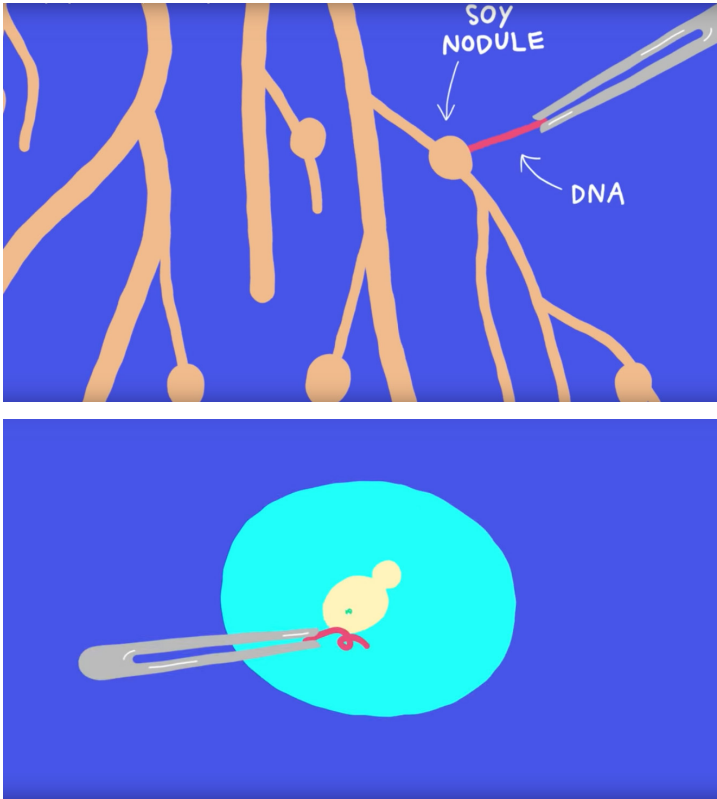
approach was “to be transparent and educate the consumer about what we use and how we use it,” noting, “people tend to be a little scared if they don’t understand,” even though everything Impossible uses is “safe and approved for food.”

The company’s approach to transparency was also on full display on its website. The pages about heme explained that it was an essential molecule found in every living plant and that theirs was made “via fermentation of genetically engineered yeast, and safety-verified by America’s top food-safety experts and peer reviewed academic journals.”<sup>2</sup> A short video called *Heme—the Magic Ingredient in the Impossible Burger* used colorful animations set to soothing music to explain why the company used genetic engineering to produce heme and how the process worked. A female scientist explains, “Every decision that we make is really driven by our values and our mission. We want to feed the population in 2050. We want to do it in a way that does not destroy the planet. All of the decisions that we’ve made have been to produce a product that we can make in a way that is scalable and sustainable and safe, and that applies to heme.” Later, as animations show a root being picked from the ground by hand, another female scientist explains that while heme could come from the root nodules of soy plants, the other option “would be fermentation, which is a far more scalable and sustainable way of making that protein” (Figs. 15 and 16). She notes that the process is something people are familiar with because yeasts are also used for making certain kinds of beers and wines. After some footage of blue-gloved technicians in lab coats producing heme in an industrial setting, the imagery returns to brightly colored cartoon animations playfully depicting DNA, represented as a little red squiggle, being pulled from a soy nodule with tweezers and then inserted into “our yeasts” (Figs. 17 and 18).<sup>3</sup>



Figures 15 and 16. Two stills from *Heme—The Magic Ingredient in the Impossible Burger* as the narrator explains that heme (soy leghemoglobin) could come from the root nodules of soybean plants. Source: Impossible Foods, <https://impossiblefoods.com/heme>.

While Impossible Foods promised something entirely new when it came to how meat was made, the company clearly adopted a familiar approach to imagining and communicating with the public. Impossible imagined a public that feared heme and the technology behind it and whose objections needed to be overcome so the public benefit could be delivered.<sup>4</sup> Shaped by food scientism, Impossible assumed not only that technological innovation was the solution to the challenge of feeding a



Figures 17 and 18. The narrator explains that Impossible produces heme through fermentation instead, first taking DNA from the soy leghemoglobin (figure 17) and then inserting it in “our yeasts” (figure 18). Source: Impossible Foods, <https://impossiblefoods.com/heme>.

growing population on a warming planet but also that any public skepticism of this technofix must be because of lack of scientific understanding rather than legitimate concerns about the aims and assumptions behind the innovation or its potential impacts beyond individual health and safety.<sup>5</sup> The company sought to assure the public that heme was natural, familiar, and safe because it believed people’s concerns could only be the result of misunderstandings, fear of the unfamiliar, or calculable risks

to personal health. Also reflecting the kind of communication strategies promoted by the CFI, Impossible sought to build trust through shared values and transparency. Its communication was upfront about heme being produced through genetic engineering but, instead of leading with science and expertise, foregrounded the company's commitment to sustainability while carefully assuaging imagined fears with a version of transparency that, paradoxically, did not include questions about the power dynamics that produced either the technology or the transparency.<sup>6</sup> The goal of being transparent and educating the public about heme was not to foster space for dialogue that might include disagreement, or require innovators to reflect on or even change their own assumptions about the trajectory of the food system. It was to produce informed and willing consumers for Impossible products and maintain its "social license" to operate with minimal "formalized restrictions."<sup>7</sup>

Even as those involved in the agri-food tech sector promised to radically disrupt and transform the food system, the Impossible example shows that the Real Facts frame lived on in the way they imagined and communicated with the public. My research on the broader Bay Area agri-food tech sector confirms that many innovators, entrepreneurs, and investors advancing tech-driven approaches to meeting "grand challenges" related to feeding a growing population in the context of climate change imagined a fearful public whose irrational concerns about the uses of technology in the food system had to be overcome, just like the food industry "incumbents" whose businesses they aimed to disrupt. Within the agri-food tech "ecosystem," social, economic, and political questions having to do with the future of food were insistently re-posed as technical questions, amenable to technological solutions.<sup>8</sup> At the same time, questions about consumer acceptance

of these edible technofixes were re-posed as communication challenges, amenable to the solution of transparency.<sup>9</sup>

The problems with agri-food tech imaginaries of the public were the same as those explored throughout this book, only set into more stark relief because of the radical transformations promised, as well as the very real potential—and urgent need—for the food system to be remade at this moment of reckoning. Furthermore, expert perceptions and projections of the public played an outsized role in the sector that, unlike the conventional food system discussed in the rest of this book, was dependent on private investment. Agri-food tech startups operated within an intensely investor-dependent, entrepreneurial-driven political economy. To secure essential support, they had to convince investors and others in the sector that their innovations were radically disruptive and at the same time certain to be embraced by the public, often before they even existed. Therefore, while innovation processes took place outside of any engagement with the public, imaginaries of the public as future consumers played a critical role. As I have argued elsewhere, the concerns of the public were first imagined (as deficit driven) and then handily dispensed with as innovators assured investors that eager consumers existed or that potentially reticent consumers would be overcome by transparency. Those promising to radically transform the food system through technological innovation showed no interest in engaging the public in any form of meaningful dialogue about their visions of desirable futures, assumptions about the trajectory of the food system, or who might win and lose should these visions come true.<sup>10</sup>

Imaginaries of the public and assumptions about the ideal form of the relationship between science and society played an important role not only in the way the agri-food tech sector has



taken shape but also in its potential. Many scholars, including me, have elaborated the limits of the disruptions both promised and delivered by the sector, showing for example the narrowness of how sustainability has been defined and calling for questions of power and justice to be centered rather than considered outside the scope.<sup>11</sup> Fewer have attended to how knowledge politics and projections of the public are inseparable from this. Looking at both plant-based and cell-cultured animal product alternatives (also referred to as cellular, cultivated, and lab grown, among other names), Garrett Broad assesses the possibility for what he calls “food tech justice,” arguing that while it is most likely that these alternatives will be incorporated as reforms into existing corporate food regimes, the potential for meaningful systemic change is worth pursuing. In his view food tech justice would require that the production of alternative proteins benefit animals, the environment, and human health and actively seek to redress food system marginalization and inequities.<sup>12</sup> But as Broad and I argue elsewhere, a justice-oriented approach would also have to move beyond simply “building trust” in products that have already been developed. It would have to reckon with the legitimate concerns of the public, including the power dynamics shaping both innovation and communication with the public about it.<sup>13</sup>

Throughout this book I have argued that the Real Food frame should be seen as a practice of politics, an expression through both words and deeds of a critical challenge to the food industry that was rooted in refusal of the way things were. Composed of a loose collection of discourses and actions among activists, advocates, and individual members of the public, the Real Food frame appears—from a distance—as a refusal of processed food that

expressed serious questions and concerns about the aims and trajectory of the food system. Good food became “real” in a cultural context that included higher social stakes around eating right than ever before and an “eat less” approach to dietary advice that focused on avoiding potentially harmful foods. A confluence of concerns about obesity, sustainability, nutrition, and technological risk raised public awareness about the potential health risks associated with processed food—such as weight gain and harms from unregulated ingredients—while also raising broader questions about the role of processed food in the American diet, the impacts of the industrial food system, and the values of the food industry. Implicit and explicit challenges to the food industry’s relationship to science and scientific authority were central to all these concerns—and to the various social and consumer movements that arose to address them. Ultimately, what appears in retrospect as the Real Food frame presented a critical challenge to established understandings of good food, established ways of knowing good food, and long-standing imaginaries of the public. The Real Food frame reimagined the public not just as consumers whose role was to accept the products of the food industry, but as citizens who could shape the food system through their actions both within and outside the marketplace.

I have also shown that, through the more immediate, defensive lens of food industry experts, the refusals of the Real Food frame were based in irrational and misinformed fears of unpronounceable ingredients, unfamiliar processes, and technologies that were essential for delivering safe, abundant, and affordable food. The loosely coordinated, dynamic, evolving approaches that food industry actors took to responding to the critical challenges of the Real Food frame were shaped by shared ideas about both science and the public. These included an understanding that science was

the most important way of knowing about food, or food scientism, and a related assumption that negative perceptions of food processing and other uses of technology could only be the result of the public's lack of scientific knowledge, or, in other words, a deficit model of the public understanding of science. The responses of food industry actors to the Real Food frame were also shaped by the business imperative to ensure that processed foods continued to be purchased. The purpose of communication with the public, therefore, was to overcome knowledge deficits and ensure willing and eager consumers. Across all three domains explored in the chapters of this book, actors representing the industry sought to "correct" the concerns of the Real Food frame with the right kind of information. Science lessons for schoolchildren explained and celebrated the benefits of unfamiliar ingredients and modern farming technologies, comments to the FDA resisted the public's unscientific ideas about what "natural" should mean, and the organization leading a new approach to building trust sought to connect through "shared values" only to arrive at the same predetermined ends as traditional approaches.

The core commitment of this book has been to reveal the "side effects" of these efforts to educate the public about processed food and modern food production. One such effect has been the entrenchment and expansion of scientific authority over questions about food and the food system, or food scientism. The campaigns I have explored narrowly construed the issues at hand as having to do only with risks to individual health and safety posed by ingredients, technologies, and processes. Through classroom science lessons and comments to the FDA, they entrenched food scientism by narrowing the terrain of allowable questions to those science could answer. They shored up authority with vague references to science, such as Professor G. U. Eatwell and the

mantra “science-based reason.” They evoked science as a source of authority in ways that extended beyond scientific and technical domains, asserting scientific authority over questions of meaning and policy, such as what “natural” should mean.<sup>14</sup>

Another side effect of efforts to defend the food industry and maintain interest in processed food was antipolitics. The food scientism of the Real Facts frame was a form of antipolitics because it reframed the politics of the Real Food frame as ignorance and misunderstanding. Everything that followed from or was otherwise interrelated with the fundamental assumption that Real Food should and could be “corrected” by experts through education and communication contributed to the “antipolitics machine” I have sought to reveal. Time and time again the Real Facts frame re-posed concerns about processed food and the food system as problems of misunderstanding amenable to new and better forms of education, outreach, or PR. It refused to entertain the bigger question expressed by the Real Food frame—What kind of food system do we want?—and instead sought to convince the public not only that processed food was safe, healthy, and even better than fresh but also that the big questions about the food system and the uses of technology within it were best left to experts. The food industry’s projection of the public as misinformed, irrationally fearful, and lacking an understanding of food science justified not taking seriously the concerns activists, advocates, and individuals raised in both words and deeds. It also justified not taking seriously the role its own words and deeds played in the public’s growing distaste for processed food and distrust in the food industry.

Food scientism and the Real Facts “antipolitics machine” are manifestations of broader patterns in the culture of scientific institutions and science-society relations. Wynne has argued that

the unacknowledged problem facing contemporary scientific institutional culture is not the public's failure to trust but "its persistent routine externalization and projection onto others of its own possible responsibility for public disaffection or disagreement."<sup>15</sup> The public mistrust of science is, he argues, an effect of scientific misunderstandings of the public, which are themselves "provocative and alienating."<sup>16</sup> Scientific knowledge and scientific institutions imagine and project the public in reflection of their own unspoken needs. The deficit model of the public understanding of science, in its many iterations, operates as what Wynne calls a "repertoire of possible alibis which prevent an honest institutional-scientific self-reflective questioning, in public; and as an inadvertent alibi for the continued presumptive imposition of scientific meanings on public issues." He goes on: "This evasion chronically undermines what could be vigorous, mutually educative and more humanly as well as technically intelligent innovation and science."<sup>17</sup>

How could we get there? According to Wynne, taking seriously concerns that have been treated as misunderstandings and distrust would require institutional and cultural change. It would require debate both within and outside science over the "proper ends and purposes of knowledge, and the proper conditions of distribution, ownership, and control of the capacity for and practice of scientific knowledge production. It would also involve a socially and ethically informed debate about the relations between scientific knowledge and other legitimate forms of knowledge and practice."<sup>18</sup> Rather than strategize about how to induce the public to trust, scientific institutions would have to reflect on and take responsibility for their own trustworthiness. This, Wynne explains, would entail being "openly self-aware and questioning"

of their own imaginations and assumptions about both science and publics.<sup>19</sup> What might this look like in the context of the food system? What would happen if the food industry responded to the critical challenges and refusals of the Real Food frame without “reposing” political questions about the food system as technical problems of misunderstanding, amenable to the solution of better communication? What if resources currently being used to diagnose and correct the deficiencies of the public were used instead to question food scientism, rethink deficit-driven projections of the public, and reimagine the relationship between science and publics?

The institutional and cultural changes that it would take to dismantle the Real Facts antipolitics machine are difficult to imagine, difficult to chart a path toward. At the same time, they are already taking place. As Tanya Li notes, while “rendering contentious issues technical is a routine practice for experts . . . this operation should be seen as a project, not a secure accomplishment. Questions that experts exclude, misrecognize, or attempt to contain do not go away.”<sup>20</sup> The Real Food frame and the Real Facts frame produce each other through infinite points of friction, a tiny fraction of which I have isolated and described here. The seeds of ongoing, emergent critical challenges lie in both the Real Food frame and in the misdiagnoses, re-posed questions, and alienating tactics of the Real Facts frame itself. While I have argued that industry attempts to educate the public about processed food and the benefits of modern food production produce an “antipolitics machine” as a side effect, I have not shown that it has made politics disappear. On the contrary, the Real Facts antipolitics machine is an ongoing product of its own failure. The critical challenges of the Real Food frame are both “squashed”

by the Real Facts frame (to use Ferguson's term) and exceed its antipolitics machine, presenting an ongoing challenge to the food industry and its scientific authority.<sup>21</sup>

My role as a critic has been to read a mundane set of conflicts in a new way, surfacing the significance of what appears to members of the public as a problem with processed food and to experts as a problem of public misunderstanding. Having shown that the contest between Real Food and Real Facts is much more than either of these things, I invite all of us to creatively engage the central question—What kind of food system do we want?—in a way that includes rather than evades questions of power and knowledge. As my work demonstrates, the public is not anti-food science, which opens new questions about what the purpose of communication about food production is. There is no such thing as communication between food industry and the public that does not include and seek to operationalize ideas about the role the public should play in the food system and how power should operate. There are countless ways in which these assumptions about the ideal relationship between the public and the food industry can be surfaced, scrutinized, and reimagined.