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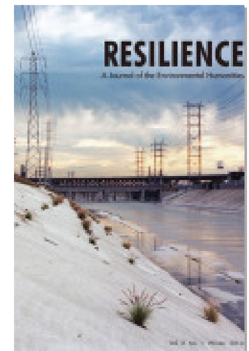

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Food Hackers and Cyberagrarians

ALLISON CARRUTH

> The Spice Mix Super-Computer is a massive mobile food machine, which allows users to create, print and taste a unique blend of spices from millions of possible combinations. . . . Users plug into the bespoke Olfactory Synthesizer, combine and compare smells from the database of international spices, then choose their favorites. After the computer processes and interprets the selection, the food-printing is complete, and users take their customized container of spices to the BetaTaster™ food counter to share recipes and experiences. . . . Spices are one of the oldest forms of long distance communication on the planet, but we do not usually treat them as information that can be combined and disseminated as a form of human-to-human communication.
>
> —Center for Genomic Gastronomy[1]

Zack Denfeld and Cat Kramer are polymaths. Trained in design and versed in environmental policy, cultural theory, computer science, and molecular biology, this transatlantic duo cofounded the Center for Genomic Gastronomy (CGG) in 2011 to explore "alternative culinary futures."[2] An interlocutor of both agribusiness and slow food, CGG cross-pollinates amateur science with multimedia art through built prototypes (such as the Spice Mix Super-Computer and the SEED-O-MATIC vending machine) along with more speculative projects (for example, the little magazine *Food Phreaking* and the schematics for a hypothetical Community Meat Lab).[3] Central to CGG's work are interactive performances ranging from an Iron Chef–styled cooking com-

petition, in which the main ingredient is in vitro meat, to the Planetary Sculpture Supper Club, whose unorthodox menus explore histories and possible futures of gastronomy.[4] Evident in the explanatory text for the Spice Mix Super-Computer, the organizing rubric of CGG's eclectic project portfolio is that of *biohacking*: performative, often counterintuitive uses of biologically based technology to foster new public forums for social activism and experimentation. In the case of CGG, biohacking seems to aim pointedly at designing alternatives to the corporate and industrialized food industry. While "tactical media" and "bioart" are the terms critics have applied to such work, this essay argues that artists like Denfeld and Kramer are better understood as members of a new *green avant-garde*, one whose roots are in the historical modernisms of Dada, neo-Dada, and little theater.[5] Along with CGG (based in Portland), leading figures of the green avant-garde include the Environmental Health Clinic + Lab (New York), Fallen Fruit (Los Angeles), Futurefarmers (Bay Area), Lindsay Kelley (Sydney and Bay Area), John O'Shea (Liverpool), Terreform ONE (Brooklyn), and the Tissue Culture and Art Project (Perth). Situating this contemporary movement in relation to the historical avant-garde bears fruit for both modernist studies and critical food studies. First, it highlights lacunae in earlier literary and artistic explorations of food and, moreover, underscores historical differences between avant-garde aesthetics and urban food cultures in both the early twentieth and the early twenty-first centuries. Second, and conversely, it invites scholars to investigate just how significant matters of taste and cultivation (as well as eating and farming) are to modernism writ large.

Scholars have begun to examine such alimentary matters in the texts of modernist and futurist writers, including Henry James, James Joyce, F. T. Marinetti, Lorine Niedecker, and Gertrude Stein.[6] This recent scholarship suggests that such writers (with the notable exception of Niedecker) tend to foreground the culinary rather than the agricultural and, often, to bracket ecological concerns. As Cecilia Novero suggests in *Antidiets of the Avant-Garde*, futurist projects that center on eating render food conceptual and inedible.[7] In the main, high modernist novelists like James and avant-garde figures like Stein dwell on the bodily and symbolic aspects of eating while eliding interconnections between consumption practices and what social scientists term food systems (which involve agricultural labor conditions, distribution infrastruc-

ture, and so on). By comparison, the members of the green avant-garde that this essay traces experiment with the cultural, technological, and ecological aspects of the edible world precisely to posit new food systems. To capture this endeavor, CGG has coined the term "cyberagrarianism" as a moniker for their work. The term invokes the agrarianism of US environmental writers like Wendell Berry who promote small-scale organic agriculture and community-supported agriculture (CSA), but it then displaces those writers' typically pastoral investments in rural life with investments in the urban and high tech as the twin ingredients for promoting what CGG calls "commons-based-peer-production over industrial models."[8]

But what makes CGG and their compatriots avant-garde? As I flesh out in what follows, twenty-first-century *food hackers* and *cyberagrarians* can be understood as avant-garde most clearly in their shared praxis of enlisting aesthetics of collage, conceptual art, and the happening—aesthetics whose roots are in the historical avant-garde—to mobilize radical social change. In this sense, the green avant-garde is a foil to "modernist cuisine," a phrase that has become a brand identity for the gastronomical innovations of celebrity chefs such as Ferran Adrìa of famed Spanish restaurant elBulli. Nathan Myhrvold, former Microsoft chief technology officer and author of the self-published cookbook *Modernist Cuisine*, coined the term to define so-called molecular-gastronomy cuisine as the information age's heir apparent to modernism. The techniques of chefs like Adrìa (who has in fact distanced himself from the rubric of molecular gastronomy) no doubt represent experimental departures from established cooking techniques and restaurant rituals; and yet the use of "modernist," interchangeably with "contemporary" and "innovative," to describe wildly expensive restaurants like elBulli reveals the fundamentally commercial nature of this cultural phenomenon.[9] Food historian Rachel Laudan, in a 2001 essay, similarly enlists the heading of "culinary modernism" to celebrate modern food science and to critique "culinary Luddites" who, in advancing slow food, neglect the brutal labor conditions and "monotonous" diets of traditional food systems.[10] In response to these celebrations of modernist cuisine and modern food science, I chart an alternative genealogy for the alimentary afterlife of modernist and avant-garde aesthetics in the work of food hackers and cyberagrarians.

In his seminal study of the historical avant-garde, Peter Bürger describes Dada practices of collage and readymade (those ordinary, industrial objects of Marcel Duchamp) as evocative of recipes. "It is no accident," he explains, "that both [Tristan] Tzara's instructions for the making of a Dadaist poem and [André] Breton's for the writing of automatic texts have the character of recipes. This represents not only a polemical attack on the individual creativity of the artist; the recipe is to be taken quite literally as suggesting a possible activity on the part of the recipient."[11] In a companion argument to Bürger's, Kyla Tompkins makes the case that the culinary recipe is itself a poetic and performative art form. As a set of practical instructions embedded "in the temporality of the everyday," the recipe is at once a formula (akin to Tzara's instructions) and an interactive medium for experimentation (akin to Breton's automatic texts).[12] In his recent book *Uncreative Writing*, experimental poet Kenneth Goldsmith further links these two cultural fields of experimental aesthetics and cooking when he observes that neo-Dada writers and artists of the 1960s, like Sol LeWitt, "swapped perspiration for procedure" to develop a "recipe-based art" that anyone might follow, adapt, or otherwise execute.[13] As we will see, contemporary artist collectives like CGG animate these tacit connections between culinary forms and avant-garde techniques by turning readymade and performance art to the task of reinventing food systems.

LeWitt's contemporary Allan Kaprow, known for his participatory and ephemeral happenings, offers perhaps the most apt illustration of how the green avant-garde both draws on and departs from its twentieth-century predecessors. Kaprow's 1964 happening *Eat* took place in the Bronx Ebling Brewery caves on two weekends in January, during which people made one-hour reservations to explore an interactive, temporary installation that enticed viewers to consume foods without the familiar conventions of eating in public. In one zone, for example, a woman "sat at a small electric hot plate frying sliced bananas in brown sugar. If a spectator asked for some, she gave them to him, but she did not speak."[14] Adrian Henri underscores the theatrical yet workaday quality of happenings like *Eat*: "a poster is made which is both advertisement and working script for the event; the piece is prepared and performed; and information about it is distributed. The audience consists of the performers."[15] This synopsis, which highlights the centrality of process and participation to neo-Dada "environments" (as tempo-

rary installations like *Eat* were termed), resonates with the procedures of contemporary food hackers like CGG, who are creating theatrical yet workaday happenings responsive to twenty-first-century conditions of commodity agriculture, biotechnology, and corporate food industries.

The speculative project titled Community Meat Lab, which Cat Kramer of CGG spearheads, showcases how the green avant-garde movement is adapting the sixties happening and allied avant-garde forms to new social terrain. A collection of sketches that depict a community-run garden and bootstrap facility for producing in vitro meat (an emerging area of scientific research), the Community Meat Lab models a discomfiting marriage of biotechnology and the slow food movement, with the latter's advocacy of artisanal foods, convivial and communal eating, and small-scale cultivation (figs. 2 and 3). A deliberately fragmentary collage of words and images, the Community Meat Lab is working in the avant-garde tradition that Bürger traces by offering a set of instructions for viewers or users to participate in acts of making (offering a recipe, in other words). Unlike with Dada collage and neo-Dada happenings, however, CGG's recipe is in part literal. That is, *cooking and cultivation* are both the aesthetic fodder and material ground for the Community Meat Lab, which seems to aim beyond the deliberately fleeting social experiment of something like Kaprow's *Eat* to a more permanent reengineering of social systems in general and food systems in particular.

An Atlanta-based design collective experimenting with robotic technologies to support very small-scale food production, the Georgia Tech project growBot Garden gives explicit voice to this aspiration: "Can design and engineering now play a role in shifting us towards more sustainable modes of agriculture? What kinds of products, services and systems would need to be designed and engineered to enable that subversion?"[16] The answer both growBot Garden and CGG offer is to adapt (or "hack") the tools of biotechnology, material science, and computer engineering toward socially subversive ends that not only reimagine but also reengineer existing systems. One might identify in their shared rhetoric not the radical aesthetic of Dada but the glossy language of Silicon Valley and especially its notions of "design thinking" and "rapid prototyping." While this critique has merit, the green avant-garde I'm outlining interweaves aesthetic and technological forms of experimentation to rethink the very privileging of the high tech in contemporary

societies. Projects like Community Meat Lab disturb the division of high technology from analog tools (bicycles, wheelbarrows, greenhouses, and so on) and provoke us to conceptualize edible flora and fauna as unruly technologies. Similarly, growBot's *Cheese Computing* prototype, exhibited at the 2010 San Jose technology and art festival 01SJ Biennial, staged and then collected data about the microbial transformations that constitute cheese, using rudimentary sensing technologies. At first glance, the project seems to fetishize computing technologies and digital data. However, the deliberately whimsical and wacky qualities of the exhibit invert the logic of agribusiness, which understands the edible world as an inert medium for experts to shape and corporations to commodify. *Cheese Computing* turns this logic on its head by creating a kind of happening where nonexpert eaters and nonhuman organisms (milk and microbes) are agents of food science. Akin to the Community Meat Lab, where the technical science of in vitro meat production is broken down into simple DIY steps, growBot's cheese happening makes visible the agency of what Jane Bennett terms "edible matter."[17]

However, these projects are arguably as interested in shaking up contemporary art––through engagements with the historical avant-garde––as they are in reimagining food and agriculture. The descriptors above of "whimsical" and "wacky" speak to the artistic intervention that green avant-garde projects stage. Sianne Ngai classifies these two aesthetic categories (whimsy and wackiness)––along with cuteness, zaniness, and the interesting––as "minor taste concepts" that have received far less scholarly attention than privileged aesthetic categories such as the beautiful, the sublime, and the pathetic. Although she argues that minor taste concepts have proven amenable to commercialization within the product design and advertising industries, especially since the Second World War, Ngai shows that the avant-garde has long taken up these "marginal" aesthetic categories to resist the "ease with which market society turns art into a 'culinary' commodity" that is easy on the aesthetic palate.[18] If the historical avant-garde thus resists art's metaphorical palatability, the green avant-garde deploys minor aesthetic categories to upset the easy palatability of food itself in the contexts of fast food and agribusiness on the one hand and slow food and farm-to-table cuisine on the other.

This endeavor comes to light in the manifestoes and multimedia artist books that CGG produces and, under an open-access Creative Com-

mons framework, encourages others to share with abandon. Among these projects is *Food Phreaking*, a little magazine that takes the form of a small-scale artist book (issue 00, released in summer 2013, is approximately four by five inches) (figs. 4–7). The origins of *Food Phreaking* are telling: a 2012 month-long residence in Singapore during which Denfeld and Kramer "roamed widely" to meet "architects, entrepreneurs, students, farmers, chefs, eccentrics and scientists" and learned from both the "food people" and the "technology people."[19] Having observed "little overlap" across these communities, Denfeld and Kramer formulated *Food Phreaking* (as with much of their other work) to build a forum where these communities would encounter one another around "experiments, exploits, and explorations in human food systems." The inaugural issue includes thirty-eight vignettes (or exempla), each composed as an image and a snippet of text, structured around four overarching categories: "A: Legal and Open," "B: Illegal and Open," "C: Illegal and Closed," and "D: Legal and Closed" (figs. 5 and 7). The book's pink-and-brown color palate and dizzying variety of exempla are formal tactics for envisioning alimentary futures that do not fit neatly into established categories within agrifood systems, whether those of agribusiness and processed food or organic farming and slow food. The content is equally dizzying, with exempla that include instructions for how to cook beet peels, a note on the rise of illegal raw-milk vending machines in Europe, two entries on Kraft's dubious branding of cheese products, a satire of the Asian fusion restaurant group Momofuku's move to trademark Korean words used for dishes, and, finally, an invocation of CGG's own use of trademarked transgenic GloFish (originally intended for decorative aquariums) in what we might call sushi happenings.

On one view, *Food Phreaking*'s four overarching categories pit proprietary, patented, and commercial food regimes (most prominently, the regime of transgenic or genetically modified organisms [GMOs]) against communal, activist, and artistic interventions in them. For instance, the ten vignettes gathered under group B, "Illegal and Open," fall under the tagline "culinary civil disobedience and outlaw ingredients," while those gathered under group D, "Legal and Closed," offer illustrations of "proprietary food engineering and closed source food design." Yet on close inspection, *Food Phreaking* muddies its own demarcations to underscore how readily "open" technologies or practices become "closed" as well as to model the variegated and divergent tac-

tics for biohacking agribusiness. One thus encounters in the "Legal and Open" quadrant a comment on the recent erosion of the long-standing principle that recipes cannot be copyrighted (a principle Tompkins addresses) in the guise of corporations who identify "legal methods for privatizing common food culture."[20] This section also includes a reference to Burpee's Big Rainbow Tomato that prompts the reader to learn more about this popular heirloom tomato seed line. A fairly small seed company that pledges not to cultivate or sell GMO seeds, Burpee nevertheless does make use of plant patenting and product trademarking to maintain ownership over seeds like the Big Rainbow Tomato. The example thus functions to reveal tensions between small-scale agriculture and open food systems.[21] Similarly, within "Illegal and Open," a page devoted to the bioartist Adam Zaretsky's 2011 happening in which "participants [took] home sprouted beans they had tattooed with DNA-laced ink [to] grow their own edible mutants" appears opposite a photograph of a cornfield and a description of Dow Chemical Company's illegal––but far from open (i.e., in the sense of public and noncommercial)––distribution in 2011 of a transgenic seed that the Food and Drug Administration had not approved for sale. Employing avant-garde modes of collage and collective authorship that are also resonant of circulating recipe collections, *Food Phreaking* calls on readers to question the neat binary of "good" and "bad" food by performing, in miniature, a heterogeneous array of tactics for interrogating food status quos and imagining different food futures.

The little magazine (which is, tongue-in-cheek, literally little in size) thus offers a window into CGG's wider project portfolio of real-time happenings, durable artifacts, multimedia artist books, and collaborations with other food hacker collectives (one of which culminated in the 2012 Dublin exhibit *Edible: The Taste of Things to Come*). A little magazine with a print and digital life, *Food Phreaking* shows the practical yet speculative, and tech savvy yet socially oppositional, character of CGG. Such a characterization applies to the green avant-garde as a whole. The Bay Area design studio and art collective Futurefarmers, for example, developed the temporary Philadelphia installation *Soil Kitchen* as a community center where the group has held participatory workshops on wind turbine construction, soil testing, and composing but which fans out from this physical space to encompass social-media and urban-agriculture meet ups (fig. 8). On a parallel track to

SEED-O-MATIC

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'Human civilization has never known a time when there has not been sea ice in the Arctic in summer.' #climate365 pic.twitter.com/vMZnLKEIl2
Reply Retweet Favorite

The Seed-o-matic is on display at the Ford Bldg. for the next week as part of the Weird Shi(f)t conference in SE PDX. http://www.poszu.com/poszu/inde shit-con/weird-shift-con-20 ...
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ABOUT

SEED-O-MATIC is a vending machine that dispenses seeds and small bags of soil:
Simply put in your change, turn a crank, and you are ready to get your hands dirty.

Each SEED-O-MATIC packet contains enough seeds to grow a small row of vegetables in your kitchen or bucket garden.

The seed varieties have been kindly supplied by seed savers from Portland, OR and around the Cascadian region. The story of each seed is contained on the packets and in the videos below.

The goal of this project is to create a vending machine that is healthy and encourages agricultural biodiversity.

CONTACT

info@seedomatic.com

If you are a seed saver and would like to be involved we would love to hear from you!

HOW TO BOOK?

The SEED-O-MATIC vending machine is mobile and doesn't require electricity. If you are interested in booking the machine for your next event in Portland, Oregon please get in touch.

INSTAGRAM #SEEDOMATIC

Fig. 1. seed-o-matic vending machine
prototype, 2013. Center for Genomic Gastronomy together with Emma Conley and Halley Roberts. Web page showing project mission, demonstration video, and images of the mobile machine installed in Portland, Oregon.

Fig. 2. Community Meat Lab, 2009.
Cat Kramer, Center for Genomic Gastronomy.

OBTAINING SATELLITE CELLS
FOR COMMUNITY MEAT LAB CULTURES.

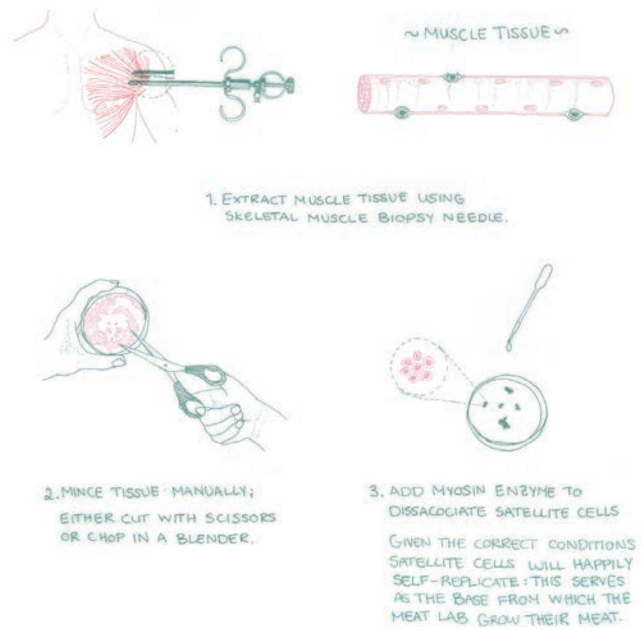

Fig. 3. Community Meat Lab, 2009. Cat Kramer, Center for Genomic Gastronomy.

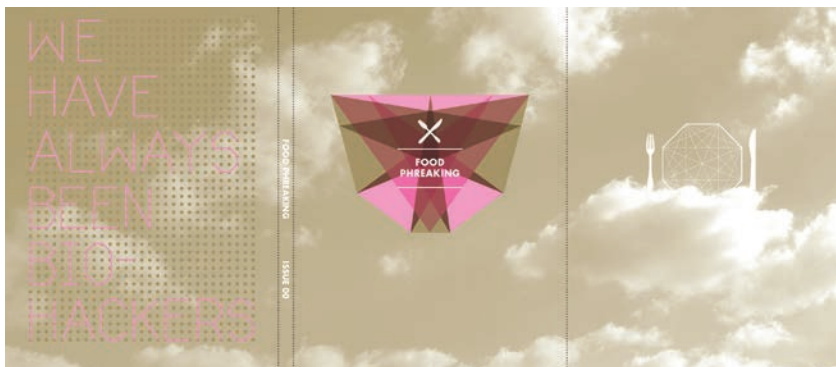

Fig. 4. *Food Phreaking* 00, 2013, exterior cover design. Center for Genomic Gastronomy.

Fig. 5. *Food Phreaking* 00, 2013, interior cover design. Center for Genomic Gastronomy.

Fig. 6. *Food Phreaking* 00, 2013. Center for Genomic Gastronomy.

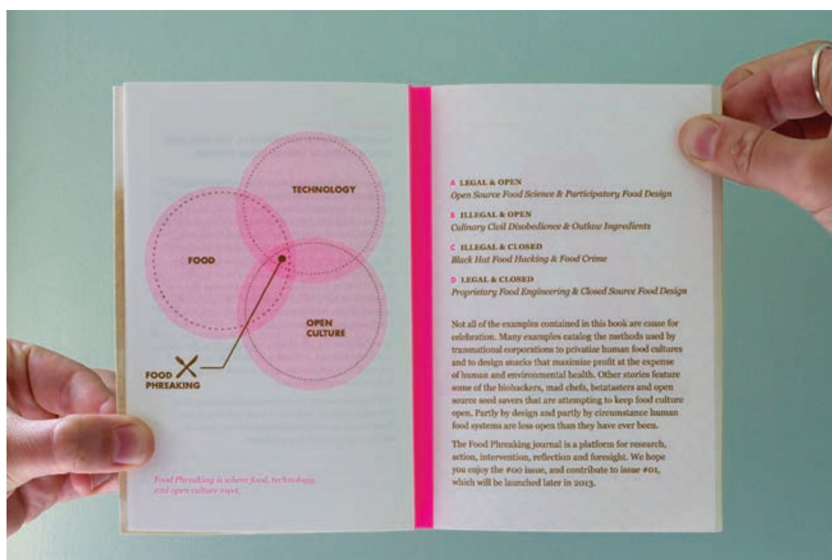

Fig. 7. *Food Phreaking* 00, 2013, interior pages. Center for Genomic Gastronomy.

Fig. 8. *Soil Kitchen*, Philadelphia, 2013, photograph of space. Futurefarmers.

Fig. 9. Cross Species (xSpecies) Adventure Club, 2010–2011.
Natalie Jeremijenko and Environmental Health Clinic + Lab.

both *Soil Kitchen* and CGG's Planetary Sculpture Supper Club, Environmental Health Clinic + Lab founder Natalie Jeremijenko has organized the Cross Species Adventure Club. This project takes the form of a series of culinary happenings that radically recontextualizes modernist cuisine (specifically molecular gastronomy techniques) by incorporating ingredients from local, nonhuman diets––ranging from grasses important to particular bird species' diets to algae that nourish amphibian populations––that prompt participant eaters to experience *cuisine* as inextricably ecological and technological (fig. 9). Futurefarmers' stated mission conveys the avant-garde vision linking these projects: "While we collaborate with scientists and are interested in scientific inquiry, . . . [t]hrough participatory projects, we create spaces and experiences where the logic of a situation disappears."[22] It is precisely here, in the claim for rupturing the prevailing logics of agricultural science and agribusiness, that these food-centered artist collectives reveal their affinity with the historical avant-garde and, most pointedly, with the notions of illogic and nonsense as well as nonsalability and collectivity that were important to Dada readymades and neo-Dada happenings. While the subject matter of the green avant-garde differs strikingly from those of artists like Duchamp and Kaprow, they share with the historical avant-garde a provocative practice of breaking down the sedimented partitions between artist and audience as well as between artistic making and everyday experience.

In defining these twenty-first-century food hackers and cyberagrarians as breathing new life into avant-garde practices of collage, readymade, and happenings, we can see the green avant-garde as tapping into a moment in 1960s American culture when neo-Dada happenings and what food studies scholar Warren Belasco terms "countercuisine" were proximate albeit not fully entangled.[23] The countercuisine melded grassroots activism with participatory performances that were evocative of the happenings––as with an April 1969 protest at People's Park in Berkeley during which members of the improvised Robin Hood's Park Commission illegally planted vegetable seeds, trees, and sod and installed picnic tables and benches.[24] In addition, writers ranging from Alice Waters to the pseudonymous Sally Soybean contributed "scathing critiques of agribusiness 'rip-offs' and 'poisons'" to underground little magazines during the same period.[25] This proximity of avant-garde art and food

activism in the 1960s waned such that the most visible countercuisine in contemporary American culture––slow food––implicitly eschews experimental aesthetics and techniques in favor of tradition and artisanship.[26] Staking out a new avant-garde that reanimates both Dada and 1960s countercuisine, today's food hackers and cyberagrarians reject the cultural divisions of craft from innovation and art from science. Put differently, groups like the Center for Genomic Gastronomy inhabit a cultural borderland between avant-garde art and food science.

ABOUT THE AUTHOR

Allison Carruth *is an associate professor of English at UCLA, where she is affiliated with the Institute of the Environment and Sustainability, the Institute for Society and Genetics, and the Center for the Study of Women. Her first book is* Global Appetites: American Power and the Literature of Food *(New York: Cambridge University Press, 2013). Current projects include "Amateur Cultures, Digital Times: Horizons of American Environmentalism," "Literature and Food Studies" (with Amy L. Tigner), and a long-term project about the environmental implications and utopian rhetoric of cloud computing. Carruth has served as media editor of* Resilience: A Journal of the Environmental Humanities. *Her recent publications include essays in* Modern Drama, Modern Fiction Studies, Modernism/modernity, Parallax*, and* Public Culture.

NOTES

1. "Spice Mix Super-Computer," Center for Genomic Gastronomy, accessed March 27, 2015, http://genomicgastronomy.com/work/2012-2/spice-mix-super-computer/.

2. "About," Center for Genomic Gastronomy, accessed October 13, 2013, http://genomicgastronomy.com/about/.

3. The SEED-O-MATIC was developed collaboratively with two students in the Collaborative Design MFA Program at Pacific Northwest College of Art, Emma Conley and Halley Roberts. "SEEDOMATIC", Center for Genomic Gastronomy, accessed October 11, 2013, http://genomicgastronomy.com/work/projects/seedomatic/. The Community Meat Lab was developed by the group's Catherine Kramer; see "Community Meat Lab," Call Me Cat, accessed July 17, 2013, http://callmecat.com/index.php/page/view/community_meat_lab.

4. Two such CGG performances include Planetary Sculpture Supper Club events in Bangalore, India (2011), and Portland, Oregon (2011, in collaboration with Special Snowflake Supper Club and Gorilla Meats Co.).

5. I am thinking especially of Rita Raley's pathbreaking account of tactical media: new media art and design projects in which "the practice of designing rather than saving the world is another model of political engagement that has elements of destructiv-

ity . . . and elements of other modes of political organization that depend on collectivity and solidarity" (30). Raley defines tactical media as a mode of virtuosic performance in the sense of "intellectual labor that manifests in virtuoso performances rather than extrinsic product" (6). Rita Raley, *Tactical Media*, Electronic Mediations, ed. Katherine Hayles, Mark Poster, and Samuel Weber (Minneapolis: University of Minnesota Press, 2009). For scholarship on bioart, see especially Thierry Bardini, *Junkware*, Posthumanities, ed. Cary Wolfe (Minneapolis: University of Minnesota Press, 2011); Allison Carruth, "Culturing Food: Bioart and In Vitro Meat," *parallax* 19, no. 1 (2013): 88–100; Susan McHugh, "Real Artificial: Tissue-Cultured Meat, Genetically Modified Farm Animals, and Fictions," *Configurations* 18, nos. 1–2 (2010): 181–97; Robert Mitchell, *Bioart and the Vitality of Media* (Seattle: University of Washington Press, 2010); Priscilla Wald and Jay Clayton, "Editors' Preface: Genomics in Literature, Visual Arts, and Culture," *Literature and Medicine* 26, no. 1 (2007): vi–xvi; Joanna Zylinska, *Bioethics in the Age of New Media* (Cambridge: MIT Press, 2009).

6. See Allison Carruth, *Global Appetites: American Power and the Literature of Food* (New York: Cambridge University Press, 2013), 49–89; Thomas Fahy, "'I Cannot Live without a Macaroon!': Food, Hunger, and the Dangers of Modern American Culture in Edna St. Vincent Millay's *Aria Da Capo*," *Modern Drama* 54, no. 1 (2011): 1–23; Jennifer L. Fleissner, "Henry James's Art of Eating," *ELH* 75, no. 1 (2008): 27–62; Miriam O'Kane Mara, "James Joyce and the Politics of Food," *New Hibernia Review* 13, no. 4 (2009): 94–110; Sianne Ngai, "The Cuteness of the Avant-Garde," *Critical Inquiry* 31, no. 4 (2005): 811–47; Cecilia Novero, *Antidiets of the Avant-Garde: From Futurist Cooking to Eat Art* (Minneapolis: University of Minnesota Press, 2010).

7. Novero, *Antidiets of the Avant-Garde*.

8. Zack Denfeld, "Cyberagrarianism: Tagging the Foodscape," *Center for Genomic Gastronomy* (blog), August 27, 2013, http://genomicgastronomy.com/blog/cyberagrarianism-tagging-the-foodscape/.

9. The use of "modernist" to describe restaurants like elBulli along with New York's WD50 and London's Fat Duck abounds in contemporary food writing: Kenneth Chang, "Food 2.0: Chefs as Chemists," *New York Times*, November 6, 2007; Nathan Myhrvold, "The Art in Gastronomy: A Modernist Perspective," *Gastronomica* 11, no. 1 (2011): 13–23.

10. Rachel Laudan, "A Plea for Culinary Modernism: Why We Should Love New, Fast, Processed Food," *Gastronomica* 1, no. 1 (2001): 42. Myhrvold's and Laudan's uses of "modernism" to describe culinary innovations that are commercial and industrial harkens back to the 1920s and 1930s, when marketers of kitchen technologies––from refrigerators to electrical gadgets––made modernism a shorthand for "efficient production," "nutritious fuel," and "productive citizens." Joy Parr, "Issue Introduction: Modern Kitchen, Good Home, Strong Nation," *Technology and Culture* 43, no. 4 (2002): 657.

11. Peter Bürger, *Theory of the Avant-Garde*, trans. Michael Shaw, Theory and History of Literature (Minneapolis: University of Minnesota Press, 2002), 53.

12. Kyla Wazana Tompkins, "Consider the Recipe," *J19* 1, no. 2 (2013): 442.

13. Kenneth Goldsmith, *Uncreative Writing* (New York: Columbia University Press, 2011), 128–29. For her part, Sianne Ngai suggests that we understand avant-garde praxis writ large as a tacitly culinary, or "gustatory," intervention in overly palatable aesthetic conventions and tastes; see Ngai, "Cuteness of the Avant-Garde."

14. Michael Kirby, "Allan Kaprow's *Eat*," in *Happenings and Other Acts*, ed. Mariellen R. Sandford (New York: Routledge, 1995). See also Nicola Twilley, "Bronx Beer Caves," *Edible Geography* (blog), December 27, 2009, http://www.ediblegeography.com/bronx-beer-caves/.

15. Adrian Henri, *Total Art: Environments, Happenings, and Performance* (New York: Oxford University Press, 1974), 94.

16. "About Us," growBot garden, accessed October 2, 2013, http://www.growbotgarden.com/about (site discontinued).

17. Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham NC: Duke University Press, 2009).

18. Ngai, "Cuteness of the Avant-Garde," 831; Sianne Ngai, "Our Aesthetic Categories," *PMLA* 125, no. 4 (2011): 948–58.

19. Cathrine Kramer and Zack Denfeld, "Preface," *Food Phreaking* 00 (2013): n.p.

20. Tompkins, "Consider the Recipe," 442.

21. See US Patent and Trademark Office, *Global Patent Search Network*, s.v. "Burpee," accessed October 5, 2013, http://gpsn.uspto.gov/#/search/q=Burpee&sort=score%20desc.

22. "About," Futurefarmers, accessed February 21, 2013, http://futurefarmers.com/about/ (though this page is still active, the content has been changed and no longer includes Futurefarmers' mission statement). See also David van der Leer, "Future Farmers," *Bomb* 112 (2010): 36–37.

23. Warren Belasco, *Appetite for Change: How the Counterculture Took on the Food Industry* (Ithaca NY: Cornell University Press, 2007), 16–17.

24. Belasco, *Appetite for Change*, 19–20.

25. Belasco, *Appetite for Change*, 30.

26. Charles Lindholm and Siv B. Lie, "You Eat What You Are: Cultivated Taste and the Pursuit of Authenticity in the Slow Food Movement," in *Culture of the Slow: Social Deceleration in an Accelerated World*, ed. Nick Osbaldiston (Basingstoke: Palgrave Macmillan, 2013), 60.