
The Art of Everyday Food Science: Foraging for Design Opportunities

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Abstract

This workshop will examine everyday food science practices such as fermenting, brewing, or pickling edible materials, as well as foraging, bartering, or dumpster diving for food. We hope to gather a diverse group of HCI researchers, food practitioners, artists, and scientists to engage with these practices as deliberate alternatives to top-down production of both food and knowledge. Hands-on activities with food, as well as critical reflection and design exercise will envision new systems for food preservation and security, human health and nutrition, and everyday scientific literacy.

Author Keywords

Food science; sustainable HCI; community literacy; slow technology.

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Background

Broadly speaking, food science studies the preservation, selection, storage, and distribution of food. This workshop will examine everyday food science practices such as fermenting, brewing, or pickling edible materials, as well as foraging, bartering, or dumpster diving for food as deliberate alternatives to top-down production of both food and knowledge. We hope to gather a diverse group of HCI researchers, food

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practitioners, artists, and scientists to engage with design opportunities around these quotidian practices. The workshop will be structured around hands-on experimentation with food (e.g., brewing kombucha, pickling vegetables, or foraging for food), which will seed theoretical discussion and design exercises around the critical topics of bottom-up community literacy, amateur science, slow technology, and sustainable HCI.

Motivation

Over the past year, the workshop organizers have conducted extensive fieldwork with practitioners who routinely experiment with processes such as homemade beer brewing, fermenting vegetables and fruit, foraging for local edibles, brewing kombucha and kefir, farming livestock, and encapsulating human placenta (as a dietary supplement) [14]. Our work highlights how, through its long tradition of experimenting and tinkering, at-home food science engages with many critical sustainability issues: food preservation and security, human health and nutrition, and everyday scientific literacy, among others [10]. As the world's population surpasses 9 billion in the next 40 years [18], focusing on alternative systems of food production and preservation is both timely and critical for HCI's sustainability and citizen science research.

Goals

The workshop will engage with everyday food science practices as community-driven efforts to construct knowledge and envision alternatives to top-down modes of food production. To gain a grounded account of the materially-driven practices behind food experimentation, the workshop will involve hands-on work with food projects such as flavoring sauerkraut, DIY molecular gastronomy, or local foraging. These

activities will be led by food artists, scientists, and practitioners with the aim of engaging food science communities as project collaborators and future co-authors. Our hands-on experimentation along with theoretical discussions and design exercises will reveal productive touchpoints for applying interaction design to the domain of everyday food science.

Relationship to prior work

Amateur science and DIY practice has been widely studied by the CHI community, both in terms of how people participate and construct expertise outside of professional settings, as well as the broader socio-political impacts of bottom-up experimentation [1, 3, 6]. Prior work has investigated citizen science across diverse domains spanning biology, DIY, and environmental monitoring, to name a few [11, 15, 19]. This suggests an exigency for studying food science as an over-looked, albeit highly related form of amateur science. Food has been of growing interest to the CHI community, both in terms of technical system development [8, 17] and gatherings to reflect on broader design trajectories [5, 7]. Our proposal's emphasis on hands-on food experimentation is inspired by earlier, successful, and highly popular CHI workshops that focused on DIY making and grounded engagement with stakeholders [2, 9].

In parallel, sustainable HCI has tackled topics such as environmental sustainability, energy conservation, reuse of materials, or slow technology [4, 12, 13]. Everyday food science jives with this work by presenting alternatives to the world's increasing reliance on mass-produced and mass-processed foods and operating outside of the mainstream system. Moreover, the habitual nature of preparing, storing, and

preserving food speaks to HCI's earlier emphasis on supporting habitual sustainability [e.g., 16].

In short, we see food science as an under-studied yet fruitful area that intersects with two major research trajectories at CHI: amateur science and sustainable HCI. Our workshop will contribute to both of these by 1) examining how social, digital, and physical materials shape scientific literacy; and by 2) engaging with practices that counter mass-consumption and work around mainstream food systems.

Workshop issues and themes

Our workshop will address the following themes:

- *Defining amateur food science.* This workshop will examine scientifically-oriented food practices ranging from fermentation and molecular gastronomy, to testing for allergens, analyzing the quality of food, or appropriating "precision agriculture" techniques for non-precision contexts, such as foraging, small-scale farming, brewing, etc. In doing so, we will also grapple with the contentious question of whether approaching this area as a science devalues the art of food, and the relationship between science and art more generally.
- *Materially-oriented practice.* Food science materials range from tools and containers, to the food products themselves, as well as the broader digital and social systems that are drawn upon for resource and information sharing. The workshop will examine how materiality shapes practice and informs quotidian science knowledge. We will also engage with the phenomenological qualities of food science: how is experimentation (e.g., molecular gastronomy) influenced by the human experiences of taste, smell, texture, sight, and sound of food materials? How can traditional interaction design paradigms such as sensing, monitoring, or visualization technologies be applied to this space, and how would technology represent food states such as ripeness, fermentation, flavor, smell, etc.
- *Alternative systems.* Almost by definition, resisting the insidious convenience of the mainstream food supply requires alternative and sustainable practices. By working with physical food experiments, the workshop will directly engage with alternative approaches to nutrition, food culture, and food security. For example, we will reflect on bottom-up systems for material exchange: how do practitioners share their tools and the starters, strains, and finished food items they create? We will also examine alternative value systems, whereby food practices are motivated by sustainability, personal health, or cultural traditions, as opposed to efficiency or financial incentives.
- *Community literacy.* While some food science projects are relatively simple, others rely on precise conditions (e.g., particular temperatures for yeasts or cheeses), complex care (e.g., "feeding" open air fermentation starters), longer-term engagements (e.g., brewing mead over the course of several weeks), or specialized local knowledge (e.g., identifying non-poisonous edibles while

foraging). The workshop will examine the processes by which practitioners co-construct and share knowledge related to their projects. How are social, digital, and physical systems drawn upon to develop the expertise necessary for performing food experiments at home?

- *Risk and failure.* People persist with their food projects under conditions they can't entirely control. This is especially true for food projects that unfold over days or weeks and require day-to-day science in kitchens where some degree of periodic failure is almost inevitable. How do practitioners troubleshoot their work, identify errors, and iterate on their process? How do adaptations such as changing habits, sharing and collaborating, and managing risk allow people to persist in amateur science?
- *Interactive technologies for food science.* Building interactive systems for food science poses unique challenges and opportunities. For one, food is messy. What physical forms might technologies for quotidian science take on to aesthetically and functionally fit into the home? How can information about habitual practice be captured and visualized without disrupting routine? The ephemeral nature of food projects is also intriguing: how do relationships with and narratives around food science shift when the materials are physically consumed by the 'scientists' and their friends and families?
- *Slow technology.* Food science projects can be time-consuming since many processes operate on the scale of hours, days, or weeks. The

integration of complex practice into everyday routine does not occur overnight: initial forays into food science might be simple as fermenting a vegetable, foraging for a berry, or supplementing their diet with a particular herb. Gradually, these projects might become more complex—flavoring second ferment, canning large quantities of surplus foods, or relying on foraging as sustenance. How can Slow Technology research be applied to support a natural transition into food science as a habitual, everyday practice?

- *Multi-disciplinary design methods.* Finally, the workshop will be used to more broadly reflect on socially-engaged research across humanities, design, and computational fields. What are the challenges and opportunities for conducting multi-disciplinary action research with local communities? How should designers approach partnering with groups to gain trust, generate knowledge and empower the change they seek while holistically taking into account community members' perspectives? Could researchers' involvement with groups—and particular members—unsettle or subvert power structures and community relations? What are the appropriate metrics (e.g., evidence of social change) for evaluating sociotechnical systems with grassroots food communities?

Organizers

Rob Comber is a Lecturer in Computer Mediated Communication at Newcastle University. He is a founding member of the SIGCHI FoodCHI community and was Guest Editor of a 'Food and Interaction Design'

special issue of the International Journal of Human Computer Studies (IJHCS). His research focuses on everyday practices, community, social communication, participation, social media, human-food interaction, and digital civics. He employs ethnographic methods to understand how people engage in everyday practices with technology and each other.

Carl DiSalvo is an Assistant Professor of Digital Media in the School of Literature, Media, and Communication at the Georgia Institute of Technology. His research draws together the humanities, science and technology studies, and design to increase public engagement with technology and analyze the social and political uses of design. He is the author of *Adversarial Design* (MIT Press, 2012).

| Stacey Kuznetsov is an [Assistant Professor](#) at the School of Arts, Media, and Engineering (AME) with a joint appointment at the School of Computing, Informatics, and Decision Systems Engineering (CIDSE) at Arizona State University. Her research explores the role of technology in collective efforts to construct knowledge and address issues. She is interested in low-cost tools and hands-on making for citizen science, community activism, and (DIY)biology.

| Elenore Long is an [Associate Professor](#) of community literacy at Arizona State University. She is currently working on a book project entitled "Intu lisa maya?: Are we still in this: A Responsive Rhetorical Art for Local Public Life." She serves on the Board of Directors for the Nile Institute for Peace and Development, a transnational consortium responsive to historic trauma, a globalized economy, changing demographics, and shrinking public resources.

Christina Santana is a PhD Candidate in the Writing, Rhetorics and Literacies program at Arizona State University specializing in community literacy. She is interested in designing public dialogic opportunities that leverage and build participants' knowledge about issues of shared concern. Her dissertation, for example, "Deliberating the Future of Driving in an Intentionally-Mediated Space," explores the literate practice of "framing" (inspired by Kenneth Burke's frames of acceptance and rejection) for the purpose of fostering productive speculation about the future of driving.

Website: <https://foodscichi.wordpress.com/>

Pre-Workshop Plans

Prior to the workshop we will solicit participation through the standard channels of ACM email lists and via the CHI 2016 website. We will also leverage our existing personal and research networks in food studies, food design, and interaction design to reach a broader swath of participants. In particular we will reach out to various food, DIY science, and interaction design communities in the Bay Area. Several of the organizers have connections within those communities in the Bay Area and we hope to use those connections to attract a diverse group to the workshop, including artists, activists, food scientists. The call will not be limited to those already part of the CHI community, indeed we hope to reach and engage with those who have not previously participated in CHI.

To give a public face to the workshops, we will develop a simple website using tumblr to promote the website, connect to related work in the Bay Area and beyond, and as participants join the workshop, connect with and share their work. The website will be a resource for

sharing [ideas](#) and work before the event, in an effort to identify and build upon common themes that emerge from the participants. During the workshop, we will use standard social media tools (Instagram, Twitter, etc) to document the workshop in near-real-time. After the workshop the Tumblr site will remain live and we will update the site with images, video, and text documented from the workshop.

Workshop Structure

Prior to the workshop, the organizers will gauge participants' expertise in particular hands-on food domains. Based on this early correspondence, several participants will be invited to lead hands-on activities around their interest areas. After brief introductions, the first half of the workshop will revolve around hands-on experimentation with food. Food products and tools will be provided by the organizers. The hands-on work will occur at a previously-coordinated venue that supports work with food (e.g., a local culinary school, restaurant, or coffee shop). Afternoon discussion and synthesis will be used to reflect on discovered themes and develop design strategies.

Time	Activity
9am-9:30	Welcome and introductions by organizers
9:30-10	1-minute introductions by participants
10-10:30	Walk to off-site location
10.30-1:00pm	Morning hands-on session with food. Tangible food products will be created and experimented with, including hands-on activities with projects such as sauerkraut, kefir, kombucha, bread, cheese, etc.

1-2pm	Lunch at food-science-oriented venue
2-3pm	Synthesis of morning activity and discussion to identify key themes
3pm-4.30pm	Break out into groups and work on design concepts to envision systems around the identified themes
4.30-5pm	Groups report back and showcase design ideas; final wrap-up and synthesis.

Post-Workshop Plans

We will follow the workshop with three strands of engagement and dissemination activities. The first strand will focus on the immediate CHI conference and its attendees. We will engage CHI attendees with our workshop through a public tasting event at the main conference. This tasting event will include some of the edible outputs of our workshop activities alongside a poster and dissemination materials for CHI attendees. The second strand will focus on ensuring an ongoing discussion and sharing of resources among workshop attendees and other interested parties. This will comprise of a set of media content created during the workshop to be shared on the workshop website, and a series of follow-up content created by workshop attendees to report on the outcomes of their food science experiments. The third strand will focus on delivering a report of workshop activities to the wider HCI community. We will achieve this first, through, a report in ACM interactions magazine outlining the shared goals and outcomes from the workshop; and second, through a special issue of a leading HCI journal to share workshop participants research. This special issue will be an open call for defining the agenda for food science research in HCI as a response to

challenges of sustainable and secure food production, as a means to reaffirm the values of grassroots activities, and as an exemplar of citizen science as a lens for examining the mechanisms by which citizen science publics operate.

Call for Participation

Everyday food science refers to habitual experimentation with edible materials and includes practices such as preserving, fermenting, brewing, pickling, foraging, dumpster diving, or healing with food. We hope to bring together a diverse group of HCI researchers and food science practitioners to engage with these quotidian projects as community-driven efforts to construct knowledge and work around top-down modes of food production. As the world's population surpasses 9 billion in the next 40 years, focusing on alternative systems of food production and preservation is both timely and critical for sustainability and citizen science research.

Focusing on food as a platform for everyday science, this one-day workshop will examine opportunities to intersect HCI research with everyday food science. The workshop will include materially-oriented, hands-on activities with food (e.g., fermenting, brewing, or foraging) to explore the unique challenges, goals, materials, and practices that underlie bottom-up food experimentation. Working directly with food science processes will enable researchers and practitioners to critically reflect on and envision sociotechnical systems that counter mass-consumption and work around mainstream food systems.

Workshop themes include:

- Materially-oriented practice
- Alternative systems
- Sustainable HCI
- Community literacy
- Amateur science and DIY
- Slow technology
- Multi-disciplinary design methods

We welcome submissions in the following formats:

- Position paper in CHI archival format (maximum 4 pages)
- An example (photograph, video, etc.) of a prior food science project such as fermentation, foraging, or brewing, along with a brief description.
- A creative proposal for a hands-on food science project to be conducted during our workshop at CHI

In addition, participants are asked to submit a brief (200 word) personal biography.

Submissions will be accepted based on originality and quality, and will represent a spectrum of viewpoints and participant backgrounds. Submissions from underrepresented disciplines in the HCI community will be particularly welcome (e.g., food science, anthropology, literature, philosophy, political sciences, or the arts). Submissions may be sent by email to the workshop organizers at stace@cs.cmu.edu

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