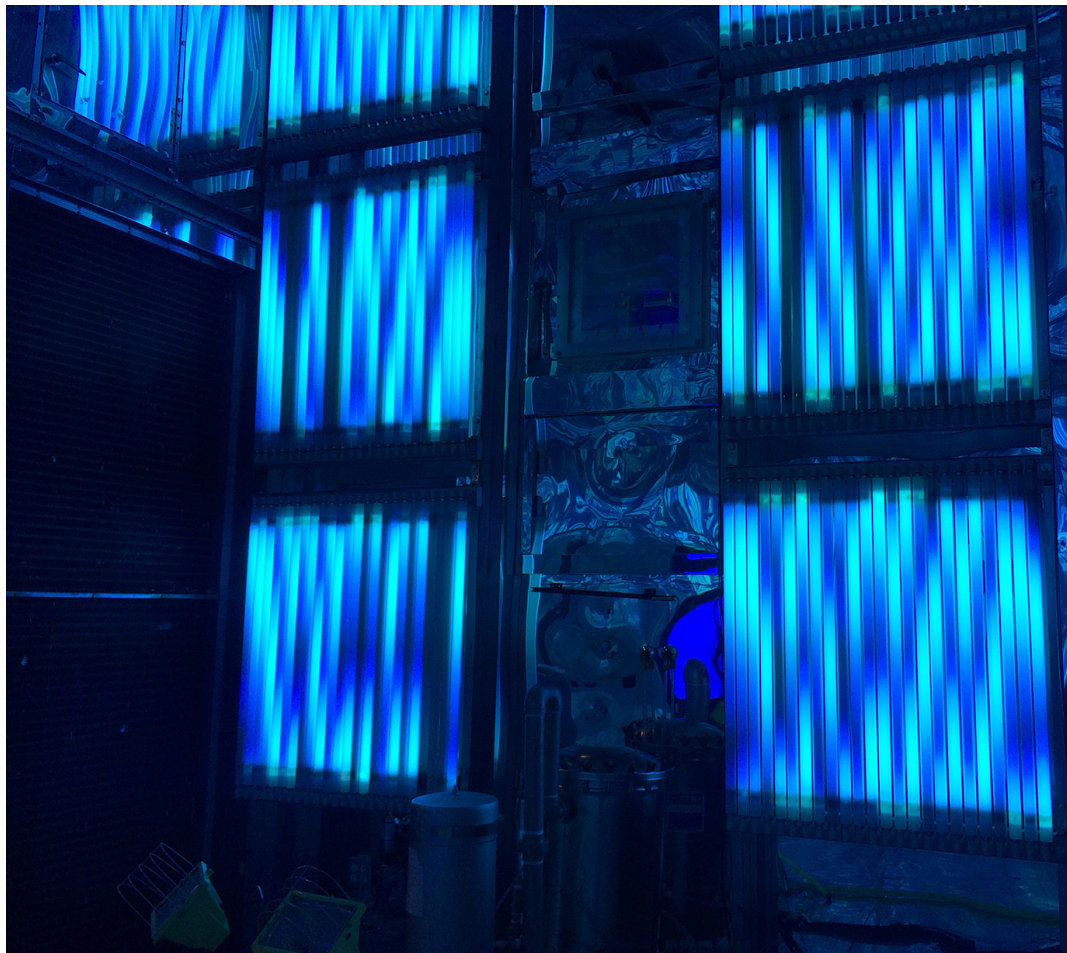


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**SMOG TASTING:  
FOUR YEARS OF  
UNEXPECTED INGREDIENTS**

The Center for Genomic Gastronomy  
with Nicola Twilley

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In the autumn of 2011 Zack and Cat, members of the Center for Genomic Gastronomy, ran a workshop at Srishti School of Art, Design and Technology in Bengaluru, India on the politics of food. During the workshop two questions emerged:

- What does smog or air pollution taste like?
- Is smog an invisible ingredient? Should it be taken into account when preparing and consuming foods?

These insights came from observing the local environmental conditions in Bengaluru, and also having chanced upon a poetic quote in Harold McGee's *On Food and Cooking*:

"Thanks to Eggs we are able to harvest the air...at the 'stiff peak' stage...[egg] foam is approaching 90% air."

This quote is a good example of the power

of combining both technical and poetic languages. The fact that egg foam contains 90% air excited one part of our brain, and the metaphor of "harvest the air" ignited an image that we then wanted to enact and document.

Working with the students in our workshop at Srishti, we recorded the first Smog Tasting video, which consisted of whipping egg meringues in different locations around the city: rooftops, roadsides and waterways.

We then took the ideas of this video forward by serving the meringues from various parts of the city on a printed map of the city, to get a sense of eaters' subjective perceptions of each of these places. For example, not very many people were willing to eat the desserts created at Mekhri Circle, a notorious and busy automobile interchange in Bengaluru. Giving people the option of consciously choosing to put air pollution into their bodies, proved a very effective way to make a ubiquitous but invisible process, into something visible, tastable and immediate.



We ended up describing the project this way:

Smog Tasting uses egg foams to harvest air pollution. Smog from different locations can be tasted and compared.

The Smog Tasting project maps air quality by harvesting air from highly polluted areas. Egg foams are up to 90% air, and whipping the eggs causes particulate matter to be trapped in the batter. The batter can be tested for heavy metals and volatile organic compounds (VOCs), compared in a microscope or baked and served as trojan horse sweets.

Take a snapshot of the air quality in any location. Serve it to politicians or business owners for a blind taste test of the air quality in their area. The tragedy of the commons never tasted so good!

One shouldn't worry too much about getting sick from these cookies: we breathe this air every day!

Since 2011 we have continued this research, translating qualitative air quality data into simulated flavours, and now are getting even more precise in our use of smog as an invisible ingredient.

In early 2015 we began collaborating with blogger,

journalist and artist Nicola Twilley on a new version of Smog Tasting designing and fabricating a smog-tasting cart, complete with built-in smog chamber, as well as developing a range of synthetic smog recipes. We began to speculate about the concept of "aeroir," and the idea that urban atmospheres capture a unique taste of place.

As we started to work together, Nicola visited the atmospheric process chambers at the Bourns College of Engineering, at the University of California, Riverside, to see how scientists actually recreate smog conditions in the lab, in order to study the relationship between emissions and atmospheric chemistry.

During her visit, a group of students was setting up agricultural smog, which is characterised by ammonia and amines from feedlot manure lagoons and other organic waste. These combine with NO<sub>x</sub> and incompletely combusted hydrocarbon emissions from cars, power plants, and industry to give the smog of somewhere like Central Valley of California, some of the worst air quality in America.

Nicola watched as a team injected precise amounts of different precursor chemicals into a gigantic Teflon chamber, where they would be cooked



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under hundreds of UV lights in order to catalyse the reactions that create smog. The students were hoping to characterise those reactions, in order to understand the entire chain of chemical processes leading to smog formation, and then design and test ways to prevent or mitigate against it.

With advice from Professor David Cocker and Mary Kacarab at UC Riverside, the Center for Genomic Gastronomy and Nicola worked out how to build a DIY, mini-smog chamber. We then developed and tested recipes using readily available precursor ingredients to create a variety of different smogs.

Each city's different precursor emissions and weather conditions produce a different kind of smog, with distinct chemical characteristics—and a unique flavour.

As it turns out, Arie Haagen-Smit, the man known as the "father" of air pollution science, was originally a flavour chemist who rose to prominence thanks to his work on pineapples. Nadia Berenstein, the flavour historian Nicola interviewed for a recent episode of Gastropod, pointed to a speech Haagen-Smit gave in the

1950s, explaining his shift in research from fruit flavours to smog science to a room full of his former colleagues. In it, he explains, "I am engaged at the present time on a super flavor problem—the flavor of Los Angeles."

This smog-tasting cart is intended as the start of a larger collaboration exploring the concept of "aeroir." After all, air is the site at which we have an intimate, constant interaction with a geographically specific manifestation of urban planning, economic activity, environmental regulation, and meteorological forces. We hope to develop a multi-sensory series of installations, devices, and performances to make that interaction sense-able.

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The Center for Genomic Gastronomy (<http://genomicgastronomy.com/>) is an artist-led think tank that examines the biotechnologies and biodiversity of human food systems. Founded by the artists Zack Denfeld (US) and Cathrine Kramer (Norway) in 2010, the Center has collaborated with scientists, chefs, farmers and hackers in Asia, Europe and North America. They are @centgg on Twitter. Edible Geography

([ediblegeography.com](http://ediblegeography.com)) is the online home of writer Nicola Twilley. Twilley tweets @nicolatwilley, can be found on Instagram @nicolatwilley, and is also co-host of the Gastropod podcast ([gastropod.com](http://gastropod.com)) as well as a contributing writer at the New Yorker ([newyorker.com/contributors/nicola-twilley](http://newyorker.com/contributors/nicola-twilley)).





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[1] UC-Riverside CE-CERT, photographed by Geoff Manaugh, BLDGBLOG

[2-4] Smog Tasting, Center For Genomic Gastronomy

[5] Smog Tasting, Rendering by Jordan Ralph Design

[6] Smog Tasting, Center For Genomic Gastronomy

[7] Smog Tasting, Jordan Ralph Design

[8] Smog Tasting, Jordan Ralph Design