RESEARCH ARTICLES

Of Foams and Formalisms: Scientific Expertise and Craft Practice in Molecular Gastronomy

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ABSTRACT This article reports on "molecular gastronomy," a food movement whose practitioners—chemists who study food and chefs who apply their results—define as the application of the scientific method and laboratory apparatuses to further cooking. Molecular gastronomy offers one example of how scientific rationales sometimes percolate outside professional scientific fields. I explore what happens when the explanatory ground occupied by "culture" is supplanted by a different mode of expertise—here, science. Following ethnographic research conducted in a molecular gastronomy laboratory, I show how French molecular gastronomists seek both to preserve and renovate classic French cuisine. Describing how they think about French cuisine in an anthropological language indebted to French structuralism—the work of Claude Lévi-Strauss, in particular—I reflect on the afterlives of anthropological concepts in scientific domains. [*science studies, food studies, France, structuralism*]

RESUMEN Este artículo presenta un informe sobre la "gastronomía molecular," un movimiento sobre la comida, que quienes la practican—químicos que estudian alimentos y cocineros profesionales quienes aplican sus resultados—definen como la aplicación del método científico e instrumentos de laboratorio para promover la cocina. La gastronomía molecular ofrece un ejemplo de cómo las lógicas científicas algunas veces se difunden fuera de los campos científicos profesionales. Exploro lo que sucede cuando un terreno explicativo ocupado por "la cultura" es suplantado por un modo diferente de conocimiento—en este caso, la ciencia. Siguiendo la investigación etnográfica dirigida en un laboratorio de gastronomía molecular, muestro cómo gastrónomos moleculares franceses buscan no solo preservar sino también como renovar la cocina francesa clásica. Describiendo que piensan ellos sobre la cocina francesa en un lenguaje antropológico en deuda con el estructuralismo francés—el trabajo de Claude Lévi-Strauss en particular—reflexiono sobre las otras vidas de conceptos antropológicos en dominios científicos. [*estudios de las ciencias, estudios sobre comidas, Francia, estructuralismo*]

RÉSUMÉ Cet article porte sur la « gastronomie moléculaire », un mouvement culinaire que ses praticiens—des chimistes étudiant la nourriture et des chefs appliquant leurs résultats—définissent comme l'application de la méthode scientifique et des techniques de laboratoire à la cuisine. La gastronomie moléculaire montre comment les logiques scientifiques s'infiltrent parfois hors du champ de la science professionnelle. J'analyse ce qui se passe quand l'explication fondée sur la « culture » est supplantée par un autre mode de savoir expert—dans ce cas, la science. L'enquête ethnographique que j'ai menée dans un laboratoire de gastronomie moléculaire indique que les tenants français de la gastronomie moléculaire cherchent à la fois à préserver et à renouveler la cuisine française classique. J'examine comment ils conçoivent la cuisine française via un langage anthropologique hérité du structuralisme—en particulier de Claude Lévi-Strauss—et je considère les survivances des concepts anthropologiques dans les sciences. [*sociologie des sciences, études agro-alimentaires, France, structuralisme*]

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Sitting in a Boston University workshop on science and cooking, I listened to Shirley Corriher, a biochemist and food writer best known for her guest appearances on the Food Network show "Good Eats," explain why she thinks home cooks might prepare better food if they had a grasp of the physical and chemical transformations that take place during cooking. As an example of this "scientific understanding," she related in a honeyed Georgian drawl how to cook green beans so that they turn a vibrant green rather than a "yucky army drab" color. As she spoke, she leaned forward in her chair, lifting her arms over her ample frame to manically gesture and pantomime biochemical theatrics:

> You've got a happy little green bean. It's taking in oxygen, just like we do, using it to burn up big compounds, and it's giving up carbon dioxide. And you drop it in boiling salted water and *eeeeeeee*! Its little protein cell wall coagulates and shrinks and it starts leaking like crazy and the glue between the cells has pectic substances. . . and it's actually hemicelluloses and all sorts of big mess. And anyhow, it changes the plain old pectin, which is water-soluble, so the glue between the cells dissolves and the cells fall apart. I mean, it is just mass death and destruction! The poor cells are leaking and falling apart! You know, it's no wonder fruits or vegetables get soft when you cook them. So anyhow, but there's all this acid coming out of those cells. So that's where the acid is coming from. So the cooking time is going to be vital. [public lecture, Boston, MA, April 26, 2009]

The audience, a mix of local chefs, restaurateurs, bakers, and graduate students, scribbled frantically in notebooks as Corriher spoke. She finished her recipe by telling her audience that if you cook green beans for less than ten minutes they will stay bright green. She laughed as she recounted how she once explained "mass [cell] death and destruction" to Julia Child. Switching between her voice and a dead-on Julia Child treble, she reenacted their conversation, in which an imaginative understanding of hemicellulose and protein coagulation was of vital importance to Child's creamed spinach recipe.

Corriher's high-pitched "*eeeeeee*!" affectively conveyed the cellular trauma of dinnertime, calling on our shared cellularity ("just like we do") to map chemical knowledge onto practical knowledge of cooking and eating. Her cellular ventriloquism cautioned the audience not to overcook their vegetables. It also pushed them to attend to how their own experiences cooking and eating are entangled with chemical and cellular transformations, on one hand, and broader gastronomical considerations, such as classical French techniques for cooking green vegetables, on the other hand. Corriher is one of a growing number of chemists experimenting with food, using scientific principles to talk about cuisine and culinary technique, as well as to ground their explanations of—and attempts to improve on—cultures of cooking and eating.

In this article, I report on the French branch of a food movement called "molecular gastronomy," which practitioners—physical chemists and biochemists who study food and chefs who apply their results—define as the application of the experimental sciences and laboratory apparatuses to furthering the culinary arts.[1] During my fieldwork in 2009, molecular gastronomy comprised a small network of chemists who devoted all or part of their time to studying food preparation and degustation, as well as dozens of "molecular cooking" restaurants, mostly in the United States and western Europe, that concoct new dishes using laboratory techniques such as vacuum distillation and centrifugation and chemical compounds with exotic-sounding names such as transglutaminase, methylcellulose, and xanthan gum.

In contradistinction to other contemporary research fields in which science and food intersect, such as food science and nutrition, as well as the Fordist and U.S. futurist "modernization of food" in the early 20th century (Belasco and Scranton 2002; Fitzgerald 2003; Page and Walker 1991; Ritzer 2004; Stoll 1998), molecular gastronomists emphasize that the aim of this interchange is not "eating as resource extraction" (Belasco 2006) but, ultimately, taste and pleasure.[2] It is in this spirit that Harold McGee, science writer and author of *On Food and Cooking* (2004), defines molecular gastronomy as "the scientific study of deliciousness."[3] When I asked a supramolecular chemist working at a company that markets "molecular gastronomy" food additives to chefs about the difference between his prior work and his current job in molecular gastronomy, he told me that when he now does research, he has in mind the dish that might be made based on his discoveries and the pleasure people will someday feel while eating the fruits of his scientific labors. Other currently ascendant food movements—such as the slow food, locavore, fair trade, and organic trends—seek to rescue "real" food (local, organic, slow) from modernization and globalization. They reference nostalgic agrarian pasts, local heritages, and ethical or political appetites, which they pose as reacting to technoscientific incursions into foodways (Heller 2007; Hess 2004; Lyon 2006). In contrast, molecular gastronomy inverts the valuation of "authenticity" above technoscience by asking how technoscience itself amplifies or advances taste. Several molecular gastronomists told me in interviews that their movement seeks to answer the question "what will we eat tomorrow?"[4] Such a question is always calibrated against what we ate yesterday and what we are eating (or not) today. As Marilyn Strathern suggests of minglings of nature and culture, "futures necessarily belong to the present: they are what we imagine for ourselves now. The present is itself only made visible against a past" (1992:5).

The French molecular gastronomists with whom I spoke cast themselves as the stewards of French culture even as they denied the cultural bases of food and eating, refashioning cuisine as something they could explain and improve with scientific thinking. Molecular gastronomy offers a compelling example of how scientific practices and rationales sometimes percolate outside of professional scientific fields, where they can become aestheticized and fetishized, commodified and consumed. Further, it is one case in which the explanatory ground usually occupied by anthropology has been supplanted by a different mode of authority—here,

science. How does scientific authority justify or invalidate quotidian practices and vernacular, practical, and embodied knowledge? What becomes of traditional objects of anthropological thought—things like foodways, nationalism, authenticity, nostalgia, and sensation—when scientists seek to explain them scientifically, and by explaining them, "improve" them? By surveying a social movement in which practitioners shuffle culinary, scientific, and anthropological expertises in talking about, making, and eating food, I argue that French molecular gastronomists have French culture firmly in their sights: they seek to formalize and scientize French cuisine, but in so doing, I suggest, they also work to codify French culture. In short, culture is here an object of chemistry.

In what follows, I describe ethnographic research I conducted in a molecular gastronomy laboratory, I situate molecular gastronomy in a longer historical tradition of scientifically inflected French culinary movements, and I show how French molecular gastronomists seek both to preserve and scientifically renovate classic French cuisine as a national patrimony. I then link French molecular gastronomy research, as well as the restaurants in which molecular gastronomy cuisine is served, to the agroindustrial economies that enable it, suggesting material and economic continuities between molecular gastronomy and the food industry. Following chemicals back into the laboratory, I examine how molecular gastronomists' efforts to explain taste in chemical terms collapses cultural heritages of cooking and eating, positing taste as a natural phenomenon outside the influence of histories, nationalities, economies, and cultures. Finally, describing how the French molecular gastronomists I spoke with think about French cuisine in an anthropological language indebted to French structuralism—and to the work of Claude Lévi-Strauss, in particular—I reflect on the strange afterlives of anthropological concepts in scientific domains.

INSIDE A MOLECULAR GASTRONOMY LABORATORY

While conducting fieldwork among molecular gastronomists I kept a desk in the basement of the laboratory of Hervé This, a physical chemist at the National Institute for Agronomic Research (INRA) in Paris. Over the course of four months, I observed and assisted with work done in This's laboratory and attended monthly seminars on molecular gastronomy, which took place in a culinary school and were attended by chefs, as well as an annual workshop hosted by INRA. In the kitchens of molecular gastronomy restaurants in Paris, I squeezed myself into hot corners, doing my best to not interfere with the frenetic dance of sous-chefs and *stagiaires* (unpaid apprentice chefs). In the pauses before lunch shifts, I tasted their dishes, some of which—like chocolate chantilly and meringues laced with polyphenols (the compounds responsible for the taste and mouthfeel of wine)—were conceived by This. I visited the laboratory of one company, founded by a former graduate student of This, that tests and markets ("potentializes," as one chemist described it) food additives to both home cooks and professional chefs. I interviewed members of This's laboratory as well as 29 other people associated with French molecular gastronomy: biochemists and physical chemists, molecular biologists, chefs, restaurant owners, pâtissiers and bakers, lab technicians, instructors in cooking schools, and food journalists. Overwhelmingly, these conversations were held (at the interviewee's suggestion) in strongholds of traditional Parisian food culture—in cafés while drinking espressos or in bistros and brasseries over unhurried lunches or afternoon bottles of chilled wine.[5]

Although molecular gastronomy has gained traction in restaurants and research labs in Spain, the United States, and Japan, I focused my research on the French branch of molecular gastronomy because of This's celebrity status: in addition to publishing 11 books in French, 5 of which have been translated into English, he has a regular radio program and appears on television. At two well-attended monthly lecture series held in a nearby culinary school, he performed public experiments baking madeleines and measuring the pH of cognac before and after flambé. I joined his meetings with Michelin-star chef Pierre Gagnaire in which they collaboratively devised what they called an "entirely synthetic" dish, made of chemicals such as maltitol, ascorbic acid, and citric acid. The dish made headlines when served the following month at Gagnaire's Hong Kong restaurant. This also publishes monthly columns in both *La Cuisine Collective*, a journal for restaurant industry professionals, and *Pour La Science*, a French popular science magazine comparable to *Scientific American*. Molecular gastronomy has become a pop cultural phenomenon in France, and This is its figurehead.

Hervé This's name is most closely and popularly associated with molecular gastronomy, and his is the only lab devoted exclusively to molecular gastronomy research. It is located in the basement of AgroParisTech in the Science and Engineering of Food and Bioproducts Department, which is in the Analytical Chemistry research unit. The lab, as This admits, is outdated and poorly appointed, at least compared with his previous laboratory at the Collège de France. It is situated on rue Claude Bernard (named after the French physiologist) at the edge of the Montagne Sainte-Geneviève, near a host of other technical institutes, such as the École Supérieure de Physique et de Chimie Industrielles de la Ville de Paris, the Université Pierre et Marie Curie, and the Institut Henri Poincaré. The apartment I rented during my fieldwork was located on rue Vauquelin (named after the French chemist who discovered beryllium, as well as several organic compounds, among them pectin, malic acid, and asparagine). This's naming of his invented dishes after scientists—lobster Faraday, sauce Wöhler, eggs Vauquelin (yes, the same one)—made more sense to me after walking the streets of Paris. More than once, I found myself lost in the Latin Quarter, knowing only, for example, that I was standing at the intersection of Cuvier and Linné but for the life of me could not find Buffon. That the French, in general, and Parisians, in particular, venerate French scholarly culture is

apparent and begins to explain This's popular prominence.[6] During the course of my fieldwork, I accompanied This to TV interviews, and our conversations in his office were routinely interrupted by phone calls from journalists and radio producers. The combination of scientific celebrity and the French cult of food has produced the perfect growth medium in which a phenomenon like molecular gastronomy can flourish.[7]

When This invited me into his lab, I imagined an army of Gallic grad students energetically whipping meringues and pipetting hydrocolloids. The reality was more modest: I met Audrey, at the time This's only graduate student, then finishing her dissertation on the transport of sugars in fried onions. Over several months, I watched her chop many onions, measure her onion slices with calipers, keep measurements in triplicate in her lab notebook, freeze-dry samples, and then use standard-issue lab instruments to determine their chemical properties. Such methods included nuclear magnetic resonance (NMR) spectroscopy, ultraviolet-visible spectroscopy, and thin-layer chromatography, which analyze quantitatively the structure and behavior of chemical compounds. This and his three graduate students have investigated the photosynthetic pigments in green beans, the biochemical composition of carrot stocks, and the interfacial tension of transanethol in ethanol emulsions (which is a very complicated way of saying they studied why adding water to Pastis and other clear anise drinks turns them cloudy). In addition to the graduate students, the lab hosts a rotating series of internships for scientists ranging from college students to Ph.D.s interested in experimenting in molecular gastronomy. Nonetheless, despite focusing its research on foodstuffs, daily life in the laboratory felt little different from other, more orthodox research laboratories in biochemistry I have observed: the sometimes plodding pace of everyday labor involved calibrating instruments, preparing NMR samples, reading peaks on spectrographs, washing glassware, and long stretches of time inputting data into computer terminals and editing papers for publication. As Audrey acknowledged, "when I close my eyes and I think about molecular gastronomy, I see the NMR . . . the things we do in the lab [are] not really linked to what is shown in the public about molecular gastronomy" (interview, March 18, 2009). This's lab may be aiming to eradicate tacit knowledge from culinary practice, but practical laboratory skills—what some "practice-turn" theorists have called "cookbook knowledge"—remain fundamental to the lab's quotidian functioning.[8]

The foods of interest to molecular gastronomists, or at least its Parisian hub, are rigorously, unrepentantly French to the neglect of other national cuisines: in addition to the madeleines and flambéed cognac, other public lectures hosted by This touched on the chemistry of mayonnaise, pear compote, hollandaise, and crème anglaise. When I joined the laboratory in January 2009, This gave me a list of research projects he had compiled for the lab to pursue, suggesting that I choose one to work on during my time there. Eleven single-spaced pages, the document covered the gamut of French cooking and eating, including the following: a rheological study of the thermal behavior and molecular interactions in soufflés, a quantitative study of the pH of wine reductions, a microscopic examination of different types of pastry dough, and the use of nuclear magnetic resonance to examine the transformations fatty acids undergo while charcuterie is curing. A few days later, I attended his annual public lecture, held in an amphitheater directly upstairs from the laboratory. Over 200 people were in the audience, most of them French chemists or food professionals—chefs, pâtissiers, restaurateurs, and food industry representatives. Over two days of public demonstrations, This evaluated the scientific (or ascientific) reasoning in recipes of French cookbook authors from the 17th century to the present, including Nicolas de Bonnefons, Cora Millet-Robinet, and Antonin Carême. In addition to curating French culinary culture, This, his students, and his interns also feel responsible to French scientific culture. For example, members of This's laboratory reproduced the results of Antoine Laurent Lavoisier's experiments on meat stocks (This et al. 2006). In the following section, I track a few moments in the conjoined histories of French chemistry and French cuisine before describing how This's lab perpetuates and appropriates heritages of French cooking and chemistry. At the article's end, I suggest that the lab similarly conserves and appropriates French anthropological heritages, in the form of Lévi-Straussian theory.

PASTS AND FUTURES OF FRENCH FOOD

The French strain of molecular gastronomy is the latest in a long history of upheavals in French cooking. After the French Revolution of 1789, *cuisine classique* replaced the cuisine of the *ancien régime*, when indentured chefs prepared highly stylized and spectacular banquets for the French aristocracy. Postrevolutionary France saw the advent of the restaurant, and new approaches to cuisine were exemplified by the work of celebrated chef Antonin Carême, who economized and streamlined *haute cuisine*, professionalizing restaurant cooking and distinguishing it from *cuisine bourgeoise* and *cuisine de femmes*. Struck by what he called the "19th-century spirit of analysis," Carême went so far as to analyze chemically the preparation of *pot au feu*, the humble cornerstone of French domestic cookery (1833, vol. 1:lxvi, 3–4; see also Ferguson 1998:614). Writing in the same decade, the acclaimed epicure Jean Anthelme Brillat-Savarin infused his sociological accounts of gastronomy with another heavy dose of scientific thinking: "The youngest science was born, Brillat tells us, when the chemist, the scholar, and the political economist took cuisine out of the kitchen and into the laboratory and the library" (Ferguson 2004:97). At the dawn of the 20th century, Georges Auguste Escoffier, the foremost French chef and restaurateur of the time, again appealed to science to distinguish his style from that of Carême. In the introduction to his gastronomic opus codifying French cuisine, which remains the definitive textbook in culinary

schools to this day, Escoffier writes: "cookery whilst continuing to be an art will become scientific and will have to submit its formulas which very often are still too empirical, to a method and precision which leaves nothing to chance" (1979:xii). In the same text, Escoffier referred to the saucier as "le chimiste éclairé" [the enlightened chemist] (1979:2). His positivist rigor remained the dominant orthodoxy of French cookery until the social upheavals of the late 1960s, when nouvelle cuisine overthrew cuisine classique. Its torchbearers—chefs such as Paul Bocuse, the Troisgros brothers, and Michel Guérard—abridged cooking times, eliminated heavy sauces, borrowed Japanese influences, and quite notably explored "avant-garde techniques" and "ultra-modern" kitchen equipment such as the microwave (Mennell 1996:163). The leaders in each of these efforts to "modernize" French cuisine have appealed to science to rationalize stylistic and aesthetic conceits. The scientific method, in each of its manifold historical incarnations, has vindicated efforts to simplify and rationalize French cuisine for over two centuries.

This tradition of French culinary scientism is especially apparent in one of molecular gastronomy's primary agendas: applying principles from biochemistry to understand and manipulate the mechanisms of cooking, such as how proteins coagulate or phospholipids form emulsions. Using this approach, Hervé This has developed a taxonomy of sauce whereby 451 classic French sauces are categorized into 23 types (This 2006). Using this taxonomy, This has developed a series of formulas whereby he may predict new sauces that would be appealing based on the rules he has determined govern each type of French sauce: "in order to describe the complex disperse systems present in the kitchen, we introduced... a new formalism based on the formalism introduced for chemistry by Antoine Laurent de Lavoisier" (2005:140). This project does not stray far from Carême's systematization of French sauces, in which four "mother sauces... provide the base for an almost infinite number" of other sauces (Ferguson 2004:70). In *L'Art de la Cuisine Francaise*, Carême "constructed his culinary model on a linguistic system" that "could be adapted by different users to their own purposes" (Ferguson 2004:71). Now is not the first time the French have appealed to chemistry to formalize and systematize their food.

Nonetheless, in much of what the molecular gastronomists I met said and did, an ambivalence was palpable: they sought both to codify and enshrine French cuisine and to annex it under regimes of experimental deduction. For example, in March of 2009, I attended Art, Science, et Cuisine, a Parisian molecular gastronomy competition. In the event, around 100 high school and college students worked with research scientists to reinterpret classic French bistro fare—steak tartare, Boeuf Bourguignon, and millefeuilles—using laboratory techniques such as vacuum distillation and centrifugation and chemical compounds such as transglutaminase, methylcellulose, and xanthan gum. Over the course of several hours of watching each team present their modernist takes on French dishes, I saw every permutation of French cuisine inverted, deconstructed, or converted into a gel or foam. Teenagers beamed with pride at the front of the amphitheater as they demonstrated in formal slideshow presentations how they sculpted beef with transglutaminase, solidified red wine with agar, and vacuum-distilled demi-glace. While being inducted into scientific progressivism and laboratory skills, these students were simultaneously initiated into French gastronomic heritage (Trubek and Bowen 2008). The event exemplified what Eric Hobsbawm (1983) calls the "invention of tradition," in which what constitutes both tradition and modernity are normatively remade by reference to one another, following narratives of authenticity and innovation, nationalism and progress. In so doing, certain parts of French culinary culture are privileged over others. Namely, vernacular skills transmitted intergenerationally—from parent to child or from chef to trainee—get left out of French cuisine as it is reinvented as rational and positivist. If some culinary rule of thumb, such as skimming the top of a stock as it simmers, cannot be experimentally vindicated as practically useful, then, as the students who participated in the competition under This's watchful eye suggested, such a rule must be discarded. As one teenage presenter at the competition closed his presentation by enjoining us, "ne modernisons le mauvais" [Let us not modernize the bad (aspects of French cuisine)] (field notes, March 27, 2009).

New research topics in This's lab are motivated by what he (and many of the former students and interns I interviewed) consider the illogical and retrograde information that dominates cooking, which they call "old wives' tales" (This 2005, 2006, 2007, 2009; This and Rutledge 2009). They find such "old wives' tales" by scouring old French cookbooks, choosing which research agenda to pursue based on which questions would be of interest to the industrial food companies that fund the lab's research. Examples of old wives' tales that the lab has tested include the claim that salting blanching water maintains green vegetables' bright color, that egg whites form a stabler meringue if whipped in a copper bowl, and that menstruating cooks spoil their mayonnaise (the first has been experimentally disproven, the second proven, and the last, surprisingly, yielded inconclusive laboratory results but is generally treated as if disproven).[9] When I asked a biochemistry professor who teaches molecular gastronomy as part of her chemistry lab curriculum what molecular gastronomy offered, she explained: "When we see a recipe book, maybe it works ... but we don't understand. Because for a lot of centuries our ancestors did this one [recipe] like that, [so] we do it like that, and maybe it's wrong. It's wrong. And molecular gastronomy can explain why it's wrong" (interview, February 23, 2009). This explicitly genders the transmission of such ideas, as old wives' tales are either relayed from grandmothers to mothers to daughters or codified in cookbooks of French cuisine bourgeoise. Such cookbooks, which were written by and for housewives, line the shelves of This's office as ready resources for future experimental inquiry. As Audrey, This's graduate student, told me one

afternoon while we ate lunch in the courtyard behind the laboratory: "From the generation of my grandmother and mother, only women were cooking" (interview, March 18, 2009). Old wives' tales flourish among home cooks, who say, "oh, my grandmother says this," she paraphrased, while "the grandfather doesn't say anything. These books were for women." Female culinary know-how, learned intergenerationally and practiced in home kitchens, here represents the sort of cultural knowledge that This and his acolytes want to experimentally explain or discard.

An EU-funded technology transfer program called INICON has, since 2002, subsidized This's lab as well as the restaurants elBulli and The Fat Duck.[10] One white-paper bulletin for the project claimed that cooking is "deeply anchored in one country's culture, and tradition is given a great importance in the art of cooking" (Krines in press). Nonetheless, the bulletin's authors continued, rigorous scientific testing might yet salvage cooking from the "intuitive," "dubious or possibl[y] false advice" garnered from "tradition." Instead of taking old wives' tales as examples of domestic "gynocentric sciences" (Ginzberg et al. 1987) that could inform the scientization of cooking, they instead frame science as acultural and, hence, view "old wives' tales" as irrational and fundamentally incompatible with science. Under the scrutiny of testing in This's lab, old wives' tales are either dismissed or verified at a molecular level, at which point they are rechristened "culinary formalisms." Using French cookbooks to formalize French cuisine seems even more curious when one considers that such cookbooks—the work of Carême and Escoffier, for example—were first written to codify and nationalize French cuisine, and even to do so in a positivist tenor.[11] Indeed, the old wives' tales that This and his students harvest from cookbooks—such as the mistaken belief that searing meat seals in its juices—very well could be cookbook authors' abstractions and justifications of home cooks' rules of thumb. Women might have seared meat before braising it, but it is unclear whether they did so to "seal in the juices" or simply because that is how their mothers taught them to prepare meat.

Some French food writers who are skeptical of This's project question whether understanding culinary mechanisms is a worthy project. One food journalist and TV personality told me: "We [French] tend to consider that we know everything already. Our mothers, grandmothers, great-grandmothers, whatever ancestors, taught us. We don't have to understand it deeply. . . . We have this deeply rooted culture that we don't want to lose" (interview, March 31, 2009). This's scrutiny of old wives' tales tests and codifies cooking heritages that have already been repeatedly formalized. In attempting to fit cultural practices into scientific rationales, This and the students who test "old wives' tales" lose sight of the social logics that cannot be experimentally verified in laboratory settings.[12]

BETTER EATING THROUGH CHEMISTRY

Soon after my arrival in the laboratory, I was surprised to learn that much of its research is bankrolled by industrial food and neutriceutical companies, French businesses that produce yogurt and provide tap water, as well as Marie SAS, which markets frozen pizzas and quiches. Another funding source is Diana Naturals, a firm that develops natural cosmetics, food products, and dietary supplements. Audrey, for example, was funded by Mars, Incorporated, maker of pet food and confections such as the eponymous Mars Bar. But instant rice and cat food is not what journalists write about when they either fawn over or deride molecular gastronomy. They instead report on mannered and exorbitant restaurants such as The Fat Duck in England, elBulli in Spain, Pierre Gagnaire in France, and the recent crop of "Chicago School" eateries such as Alinea and Moto. Restaurants are central to the movement's identity, offering well-heeled patrons an opportunity to indulge in mind-bendingly expensive dishes that offer up one version of science, here construed as high tech and postcultural, as an object of consumption.

For example, in "FoodLab," a supper club in the basement of an art-science atelier near the Place des Victoires, the otherwise spare dining space featured circulating water baths, test tubes, and lab-grade glassware, giving it the air of a laboratory, or at least a set designer's imagination of a laboratory. Midway though our meal, my dining companion and I looked up from our "transparent egg and parmesan foam" to see the chef marching ceremoniously from the kitchen through the dining room, holding aloft a dewar of liquid nitrogen eddying icy vapors. At Pierre Gagnaire, the three-star Michelin restaurant for which Hervé This consults, our waiter treated my companion and me to a chemistry lesson. In hushed tones so as not to disturb the tablefuls of businessmen surrounding us, he briskly discussed the biological sources and melting points of different polysaccharide gelling agents, such as agar and carrageenan, and how much agar should be added to one liter of chicory bouillon to gelify it, all while serving us sea urchin bisque and potato gelato. This dining room, unlike FoodLab, eschewed lab equipment in favor of plush armchairs, dim lighting, unobtrusive jazz, and dark wood paneling. It is in restaurants such as these that taste as cultured discernment and national heritage is married to scientific progressivism.

Molecular gastronomy laboratories bridge the socioeconomic distance between the food industry, with its low-cost, low-prestige processed foods, and the exorbitant menus of high-end restaurants. The scientific work done in This's laboratory is funded by the commercial food industry, and its results in turn feed into the restaurant industry. This fact troubles some French food writers such as Isabelle Saporta, who in a televised debate with This accused molecular gastronomy of being in bed with the food industry, arguing that chemicals have no place on French plates. The question "what will we eat tomorrow?" begs the question of who decides what we eat tomorrow, a question all the more vexing when keeping in mind that molecular gastronomy research is funded by the food industry and that its experimental data is used just as often to improve the texture of frozen dinners as to dazzle diners with disposable incomes.[13]

One connection between the industrial food companies funding molecular gastronomy and the high-end restaurants that peddle it is the chemicals. Whereas previously food additives and texturants like agar and methylcellulose were only found in fast foods and frozen foods, within the last ten years, French chefs like Pierre Gagnaire have imported these chemicals into their restaurants, ennobling them from junk food to luxury cuisine. While browsing in La Grande Epicerie de Paris, an elegant food hall in the seventh arrondissement, I was surprised to find an extensive display of chemical additives. Between the Thai and Italian aisles was a shelf of molecular cooking kits: pipettes, sachets of xylitol sweeteners and kappa-carrageenan gelling agents, food-grade syringes, and silicone tubing. When I happened on this unusual display, I remembered an interview I had conducted in London a few months earlier with Rachel Edwards-Stuart, one of a handful of people worldwide with a Ph.D. in molecular gastronomy. I had asked her about such "new" food additives. She reminded me that many of these ingredients are the same as those used by the food industry for years and can be found in many commercially available foods such as preprepared apple pies and onion rings.

Anthropologists Deborah Heath and Anne Meneley (2007), in theorizing "dynamic interplay[s]" between *techne* and technoscience, draw attention to how "artisanal" foods are "imbricated in global industrial production processes." Molecular gastronomy is one case in which technoscience is itself used to legitimate food products and "establish practices of distinction" (2007:594), even as fast food and gourmet cuisine are increasingly made out of the same funding sources, research agendas, and ingredients. Fast foods and frozen foods fund scientists whose experimental work drives avant-garde "culinary creativity," but such work cannot be dissociated from the large-scale institutional interests and markets that enable it (cf. Mukerji 1989). The food industry peddles mass taste; the Parisian molecular gastronomy restaurants I visited pronounce on and set standards for good taste. Yet at both ends of this spectrum, the foods being sold and eaten are made of the same chemicals and food additives and are made possible by the same research results, which are arrived at by the same people in the same labs. By following either the money or the chemicals, one traces a path from frozen French fries to foie gras foam. I next ask what happens when chemicals and chemistry are no longer simply components of flavor but are instead used as explanatory grounds for articulating the rich and evanescent experience of taste.

MOLECULARIZING TASTE

On the desk of his laboratory office, obscured by piles of papers, tattered cookbooks, and accumulating demitasse cups, Hervé This keeps a small, unmarked metal bottle. One afternoon, while we were in conversation, This uncapped this bottle, held it to his nose, and inhaled deeply, eyes closed. He handed the bottle to me, and I did the same. I am no wine aficionado, but the earthy and leathery notes that escaped from the bottle smelled like a spectacularly good wine. I asked him what it was, and he told me it was a 1985 Haut-Brion. Did you save the dregs of a bottle to keep at your desk, I asked? No, he said: his friend, a chemist at Givaudan (the Swiss flavor and fragrance company), knowing This's favorite wine, synthesized it for him as a Christmas gift. Using gas chromatography-mass spectroscopy (GC-MS), the friend analyzed the odorant molecules of the wine then synthesized a solution with the primary odorants found in the sample.[14] Sniffing at the bottle, This wondered aloud what GC-MS might do to French wine producers. If any wine can be dosed with an engineered bouquet of molecules, could the heritage and prestige of French vintners obsolesce? Bottles such as this one do not just idle on chemists' office desks. While visiting the kitchen of Chez Léna et Mimile, a brasserie in Paris's fifth arrondissement that offers a "molecular cuisine" dinner menu including This's recipes, the owner, Christèle, grinned mischievously as she offered me an unassuming meringue, just prepared by Pascal, her chef de cuisine. When I bit into it, clouds of frozen air redolent of Shiraz raced through my sinuses and out my nose. The chef had dipped the meringue in liquid nitrogen and laced it with polyphenols, a class of molecules including tannins that gives red wine much of its aroma and astringency.

Robert Ulin writes of French wine cooperatives that Bordeaux's social capital derives from a "process of invention that transforms culturally constructed criteria of authenticity and quality into ones that appear natural," thereby "making the 'invented' appear as common sense" (1996:39, 52). Similarly, Heather Paxson describes how artisan cheesemakers, in "reverse engineering *terroir*" (or the "taste of place"), generate economic and social value and naturalize artisanal labor and innovation, "making it seem a part of nature and therefore as legitimate, inevitable, and even morally good" (2010:445). What, then, becomes of French culinary heritages and connoisseurships, cultural criteria already authorized as "natural," when they may be simulated by the chemical legerdemain of molecular gastronomy? One effect is that taste gets reformatted so that the sensation of taste is expressed in—even reduced to—a chemical vocabulary. A former student of This and owner of a molecular gastronomy company told me that when she cooks, "I do not look at the plate with the same vision as a cook or . . . a chef. I always see molecules. What will happen if I cook sugar, if I cook eggs, what happens really in the molecules inside the egg, and . . . how will I modify the taste?" (interview, February 11, 2009). This, for his part, notates a soufflé recipe whose ingredients include lactalbumin, immunoglobulins, and peptides. He describes the experience of seeing molecules in foods as akin to "liv[ing] in two separate worlds at the same time" (interview, January 30, 2009). On the whiteboard of one restaurant kitchen I visited, a recipe listed glucose, rather than sugar, as an ingredient. Anthropologists of science have shown that new technologies like genetic genealogy testing dress up existing race theories in new clothes—"molecularizing" race (Fullwiley 2007; see also Nelson 2008; TallBear 2007). Hervé This and the

chemists and chefs following his lead use technoscience to tell stories about French culinary traditions and futures. By describing taste in a biochemical idiom—"molecularizing" taste—they also sometimes efface the densely cultural influences shaping how people perceive food in favor of a formal, predictable, and naturalized account of taste.

In his portrayal of the molecularization of life, Nikolas Rose explains that "molecularization" means thinking about life "at the molecular level, as a set of intelligible vital mechanisms among molecular entities that can be identified, isolated, manipulated, mobilized, recombined, in new practices of intervention, which are no longer constrained by the apparent normativity of a natural vital order" (2007:5–6). Molecularization, for Rose, grounds intervention: explaining biology in terms of molecules makes the manipulation of living things both thinkable and doable. In molecular gastronomy, however, the object of "molecularization" is not life but taste. When taste is molecularized, then, food culture is similarly instrumentalized as a target of scientific intervention. An example illustrates this claim. "Food Pairing," a project launched by a Belgian bioengineer, uses gas chromatography and mass spectroscopy to analyze the volatile molecular components of various food items. It assumes that foods that share aromatic compounds naturally harmonize with one another, using a chemical vocabulary to evaluate how things taste and to predict which flavor combinations should taste good.[15] Food pairing not only molecularizes and naturalizes taste, it does so according to a western European perspective on what tastes good: chardonnay shares volatile compounds with brie, but whether, for example, manioc shares heterocyclic compounds with coconut remains unexamined.

In this project, the western European understanding of taste that has been entrenched since Galenic medicine is reversed: here taste is not a sign of what your food is made up of or whether it is good for you. Instead, the components of food—down to a molecular level—dictate how food tastes and even which tastes "go" together (Shapin 2012).[16] In this turn to "molecularized taste," food, cooking, and eating are altogether removed from the domain of culture, its historical exigencies, and local particularities. Instead, tastes are understood as corollaries to universal facts of nature, as revealed by modern chemical analysis. I now turn to an earlier effort to systematize and universalize taste following a chemical vocabulary, an endeavor championed not by chemists but, rather, by Claude Lévi-Strauss. I show how This's work is haunted by the Lévi-Straussian formulation of culture as built on schematic orderings of human perceptions. It is this aspect of "culture"—the organization of the lived world according to sensations and perceptions—that This, his students, and allied chefs pursue.

CULINARY GRAMMARS AND LOGICS OF SENSATION

In a workshop I attended at AgroParisTech, This spoke of his work verifying and refuting old wives' tales and taxonomizing foodstuffs in a surprisingly anthropological idiom. As he told his audience, "Lévi-Strauss sought kinship structures, and here we have a corpus of precisions, which are even more concrete. So the question arises as to whether they refer to a type of structure to be determined? Could the structuralist tools introduced a half-century ago be implemented here?"[17] He continued, citing James Frazer's *Golden Bough* and Lucien Lévy-Bruhl's *How Natives Think*, comparing old wives' tales to magical thinking that could be countered with reason and experiment. From my seat in the back of the lecture hall, I winced at This's mobilization of outdated ethnological theories to align home cooking—and by extension, women's work—with "primitive mentality." His reference to social evolutionists and their critics posited "culture" as an inherited accretion of folk practices and perceptions waiting to be codified, rationalized, and universalized by the scientist—here, either ethnologist or molecular gastronomist.

This's parents were members of the midcentury Parisian intelligentsia, and This warmly recalls many dinners with Claude Lévi-Strauss (as well as Jacques Lacan and André Leroi-Gourhan) at his parents' home.[18] In recognition of my role in his lab as an anthropologist, he reread *The Savage Mind* (1966), often bringing it up in conversation, asking me whether anthropology was closer to poetry or mathematics. Returning to the laboratory one afternoon after a morning spent in the kitchen of Chez Léna et Mimile, I found that he had left on my desk a photocopied excerpt from the book. In the passage, Lévi-Strauss argues that modern chemistry has divined the chemical basis of many of the smell and flavor affinities that we intuitively recognize:

> Thus to a logic of sensations tobacco smoke might be the intersection of two groups, one also containing broiled meat and brown crusts of bread (which are like it in being composed of nitrogen) and the other one to which cheese, beer and honey belong on account of the presence of diacetyl. Wild cherries, cinnamon, vanilla and sherry are grouped together by the intellect as well as the senses, because they all contain aldehyde. [1966:12][19]

Here, as in This's laboratory, the gustatory experience of taste—the notion that cherries "go" with vanilla—is universalized, explained not as personal preference or learned flavor combinations but as a simple and inarguable fact of chemistry. In his "Fugue of the Five Senses" in *The Raw and the Cooked* (1983:147–163), Lévi-Strauss identified auditory, gustatory, olfactory, visual, and tactile systems as fundamental (and synaesthetically interchangeable) "sensory coding systems" that anthropologists could leverage to analyze mythology. Structural analysis, he suggested, could not be accomplished without attending to the senses mediating binary operators. Edmund Leach, following Yvan Simonis, observed that "although Lévi-Strauss originally set out to display the structure of the 'human mind,' he has ended up by telling us something about the structure of aesthetic perception" (Leach 1970:126–127). This's insistence on bringing this particular passage—and Lévi-Strauss's work, in general—to my attention is demonstrative: if Claude Lévi-Strauss, the celebrated French anthropologist whom Nikolas Sarkozy (2009) described following his death as

"one of the greatest ethnologists of all time," argued that our intuitive, aesthetic perception of flavor can be confirmed systematically by chemistry, then who was I to argue otherwise?

Furthermore, in invoking Lévi-Strauss, This explicitly compares his catalog of old wives' tales to kinship systems, the anthropological category in which the establishment of social relatedness is both made in reference to and is productive of "facts of nature" and "facts of culture" (Strathern 2005; see also Franklin and McKinnon 2001; Franklin and Ragoné 1998). Rather than following Lévi-Strauss's project of uncovering the universal elements of social structures that are generally applicable to all societies, This and his students instead seek to synthesize a rational cooking schema that references French cuisine while positing its universality. It is in this respect that, despite their work to exceed or succeed culture, This and his colleagues chase *after culture*, to borrow Stefan Helmreich's coinage. Being *after culture*, for scientists, means two things. First, researchers recognize "themselves as cultural subjects," admitting their own perspectivalism while understanding culture as "driven by a universal . . . logic" (Helmreich 2001:621). Second, they are "pursuing [culture] as an object for their own study and explanation," subsuming culture within the object of their study (Helmreich 2001:621). Here, French food culture becomes a subset of chemistry.

In "The Culinary Triangle," Lévi-Strauss applied linguistic formalisms to food, claiming that cooking, like language, is a universal human activity. The way people eat, he claimed, constitutes a "language in which it [society] unconsciously translates its structure—or else resigns itself, still unconsciously, to revealing its contradictions" (1997:35). He named the smallest unit of this culinary system the "gusteme," after the linguistic phoneme. The difference between Lévi-Straussian theory and molecular gastronomic thinking, perhaps, is that, in the Culinary Triangle, cultural objects mirror human conceptions of natural orders: "Lévi-Strauss's thesis is that by noticing how we apprehend nature, by observing the qualities of the classifications which we use and the way we manipulate the resulting categories, we shall be able to infer crucial facts about the mechanism of thinking" (Leach 1970:21). But culinary formalisms, Lavoisierian nomenclatures, and taxonomies of sauces are not, for This and his followers, classifications that say something about culture; these categorizations are ways of sorting and systematizing the putatively natural laws governing food. Such classifications are normative (ways food should be) rather than simply descriptive (ways food simply is). In short, for Lévi-Strauss, culinary and other cultural structures were ways of discerning the facts of culture; for This and like-minded molecular gastronomists, culinary structures are ways of discerning facts of nature.

WHAT WILL WE EAT TOMORROW?

Earlier, I posed the question of what becomes of traditional objects of anthropological analysis when they are evaluated not ethnographically but scientifically, using the tools, techniques, and principles of experimentalism. This's project exemplifies what happens when scientific expertise supercedes two domains typically occupied by anthropological expertise: first, scientific data is used to adjudicate the vernacular knowledge of cooks and chefs; second, it is used to explain commonsense cultural understandings of taste. Efforts by members of This's lab to bring experimental deduction to bear on French cuisine and culture takes many forms. As I have shown, this work begins by referencing and refashioning classical French dishes and national cuisine more broadly—what France ate yesterday. This acknowledges and venerates French cooking, its dishes, chefs, and authors. In so doing, he also pays homage to histories of French chemistry. Yet the project of molecular gastronomy also excises commonsense vernacular knowledge (cultures of French home and restaurant cooking) from acceptable contemporary culinary practice, attempting to dispose of those aspects of French culinary heritage that are not explainable using the tools of chemical experimentation and analysis. Paired to this impulse is the lab's work to elevate and fetishize chemicals in high-prestige foods served in distinguished French restaurants, moving such chemicals from the fine print of processed food labels to center stage in "entirely synthetic" dishes served by Michelin-star chefs. It is unsurprising that ascendant aesthetics of technoscientific progressivism have filtered into high-end cuisine, among other traditionally nonscientific domains, as science becomes something worthy of consumption by cultivated palates.

Although distancing molecular gastronomy from the food industry and mass-market comestibles, This and his students nonetheless codify the experience of taste by articulating it using a chemical vocabulary. Following Lévi-Strauss's work coding aesthetic perception, This seeks to identify a rational and universal cooking schema that can systematize and explain taste following the rules of chemistry. In so doing, he hopes to inaugurate a new regime of eating—an answer to the question "what will we eat tomorrow?" Scientific rationales here predict, justify, and warrant not just French food but French culture writ large. No longer the culmination of densely imbricated relations between foodways, local know-how, regional ecologies, individual biography, and learned discernment–now food, cooking, and taste are imagined to be mere side effects of chemistry. The three-dimensional conformations and interactions of volatile aromatic compounds, by this logic, replace social, political, and economic conformations and interactions of people with national, familial, and ethnic identities, senses of nostalgia, taste, and historicity. Like Corriher's shrieking green bean, these molecules haunt the embodied experience of cooking and eating—even past and future "invented traditions" of French gastronomy.

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NOTES

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1. I here use the term *movement* to describe molecular gastronomy because it is a form of collective action that is diverse in its aims and involves a distributed group of actors who have joined forces to champion a new approach to French cuisine. I do not imply that because it is a "movement" it is necessarily political or entails social conflict. Nevertheless, molecular gastronomy is insufficiently established to be called a "discipline" and is not sudden enough to be a "trend" or "fashion." Sociologists and historians have tracked nouvelle cuisine using social movement theory, arguing that "the Grande Gastronomy crystallizes and precipitates latent trends in the society. . . . When studying the nature and content of the Nouvelle Cuisine, once could perceive a large part of further evolutions in the attitudes and behaviors in France" (Fischler 1993:247; see also Rao et al. 2003:803; Rao et al. 2005).
2. As Warren Belasco says of the culinary modernism he identifies in multiple moments from Victorian fairs to the present:

> The modernist future is one of radical discontinuities, of unprecedented needs, drives, and breakthroughs. It celebrates purity, shortcuts, simplification, automation, and mass production while dismissing soil, sweat, labor, craftsmanship, and ornament. Its favorite forms are tubes, beakers, buttons, domes, dials, and tunnels—the tools of engineering. . . . The modernist declaration of independence from tradition is quite volatile, as it unleashes forces that both support and subvert the growth of consumer capitalism. [2006:166]

   The difference is that molecular gastronomists do not dispense with taste—this is not meal-in-a-pill modernism. Rather, they mobilize technoscience in the interest of taste.
3. Peter Barham, a molecular gastronomist at the University of Bristol, proposed that molecular gastronomy might "give some quantitative measure of just how delicious a particular dish will be to a particular individual" (Barham et al. 2010:2361).
4. This phrase began circulating after This posed the question, "Que mangerons-nous demain?" in his lectures and books.
5. This research was supplemented by further fieldwork I pursued outside France, including a research trip to the test kitchen of a molecular gastronomy restaurant in England and attendance at molecular gastronomy workshops in the United States.
6. I do not here generalize the status of intellectual authority in France: that a biochemist can be a household name among some middle- and upper-class Parisians in the 21st century is not equivalent to scientists' cultural cache during Baron Haussmann's renovation of Paris. Some disagreement exists on the current status of French intellectuals. Richard Posner characterizes them as "media stars" (2001:12); others have emphasized public intellectuals as curators of French culture (see, e.g., Ahearne 2010). For a review of the sociology of public intellectualism, consult Kurzman and Owens 2002.
7. This's habit of memorializing French scientists in the names of new dishes is part of a French tradition dating to the 17th century and epitomized by Antonin Carême, who named his dishes after scientists, authors, military heroes, and nobility (Ferguson 2004:74).
8. Since the 1970s, social scientists and historians have approached science as a field of social practice like any other, amenable to similar tools of investigation and analysis as anthropologists apply to other cultural activities (Collins 1985, 2004; Galison 1987, 1997; Knorr-Cetina 1981; Latour 1987; Latour and Woolgar 1986; Lynch 1993; Pickering 1984, 1995; Traweek 1988). The late-20th-century turn to practice in the sociology of science and technology (Fujimura 1996; Lenoir 1988; Lynch 1985; Schaffer 1989) was undertaken by scholars who, in attending to everyday activities in laboratory and field sciences (e.g., the embodiment of "tacit knowledge" [Polanyi 1962]), called attention to "craft" knowledge and practice. The "practice turn" in the sociology of science appropriated craft facility as a goal-oriented refinement of physical skill, arguing that "mastery of a practice cannot be gained from books or other inanimate sources, but can sometimes, though not always, be gained by prolonged social interaction with members of the culture that embeds the practice" (Collins 2001:107). Although in some cases the craftspeople who built scientific instruments were the focus of discussion, particularly in connection with the rise of experimental ways of life (Shapin 1988; Smith 2004), more often artisanal work was used analogically to illustrate modern lab practices. For example, Kathleen Jordan and Michael Lynch, following phenomenologist Alfred Schutz, describe laboratory protocols as "cookbook knowledge" (1998:779). Ian Hacking depicts scientific practice as akin to cooking: "Good cooks must know their foodstuffs, their fire, their pots; that is true by analogy of the person who tends the [laboratory] apparatus" (1992:49). Bruno Latour and Steve Woolgar portray an immunoassay as "a complicated recipe" (1986:65). Karin Knorr-Cetina writes that a laboratory "protocol is like a recipe, you use it without necessarily caring about the chemical, biological, thermodynamical and other processes which make it work" (1999:275). Trevor Pinch compares scientific apprenticeship to apprenticing in restaurant kitchens: "A long apprenticeship at the lab bench is crucial. Cooking is another activity full of tacit skills. . . . Apply for a job as a chef in a leading restaurant, and they will not want to know how many books on cooking you have read, but in whose kitchen you learned to cook"

(2001:23). In each of these analogies, cookbooks and recipes represent routinized and embodied skills, the techniques researchers know how to do even if they might not understand why they work.

9. This says the prevalence of old wives' tales first prompted him to explore the biochemical principles behind cooking: "As recently as 2001, an inspector from the French Department of Public Education said, during a public lecture, that her mayonnaise failed when she was menstruating. Such old wives' tales were partly the reason behind the creation of molecular gastronomy" (2006:1063).
10. INICON is a loose acronym for "Introduction de technologies innovantes en gastronomie pour la modernisation des méthodes de cuisine" [Introduction of innovative technologies in gastronomy for the modernization of culinary methods].
11. Arjun Appadurai (1988) similarly argues, using Indian cookbooks as an example, that cookbooks "construct" national cuisines.
12. I thank Brad Weiss for this insight.
13. I am grateful to an anonymous reviewer for pointing out how this question is about power as much as about dinner.
14. A bottle of Château Haut-Brion Pessac Léognan 1985 retails online for between $360 and $600.
15. Sense For Taste, the company that develops this Food Pairing software to advise chefs, is funded in part by Firmenich, one of the largest flavor and fragrance corporations in the world.
16. In this respect, this article responds to David Sutton's call for anthropologists to perform *gustemology*, which he defines as a set of "approaches that organize their understanding of a wide spectrum of cultural issues around taste and other sensory aspects of food" (2010:215).
17. My translation from the French.
18. Michel Foucault also visited often. Foucault lived in the apartment directly above This's parents on the ninth floor. However, he and This, then a teenager, did not get along.
19. When I asked him about the photocopy, This took issue with Lévi-Strauss's chemistry—his use of families of compounds, rather than specific chemicals, his failure to define "diacetyl"—although not his anthropology. "He's saying something about chemistry completely crazy, nonsense, one full page, the idea is bad. I mean, he's wrong. It's not chemistry, it's not nothing. It's saying that there are five food sensations and there are 500 molecules and it's completely wrong" (interview, March 9, 2009).

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