



# Observations from the Frontier of Deliciousness

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I could be wrong, but when I think about this insect madness, it all started for the lab under this tent. At MAD1, Alex Atala served an Amazonian ant that tasted of lemongrass, which blew open the minds of everyone willing to try it. René asked Mark Emil Hermansen, then Nordic Food Lab's anthropologist, why he couldn't serve insects on his menu. That question has since evolved into a multi-year research project into insect gastronomy—since, like seaweeds, wild plants, game, sea creatures, and fermentations of all sorts, we need knowledge of these underutilized raw materials and processes to understand how to discover their delicious potential in the context of our cuisine.

This pursuit of insect-related gastronomic knowledge and how to apply it in the kitchen has taught me also about cooking in general. Cooking can expand the edible world through the discovery and application of deliciousness, further diversifying the range of foods available to us. It can also be the application of knowledge of both how to transform these foods and, importantly, how much.

Yet insects have also been one of the classes of organisms that have most readily shown me a type of gastronomy, a knowledge of food, that lies outside our conventional understanding of “cooking.” This knowledge is crucial for understanding what we are and are not capable of in our kitchens, and where we should look for the knowledge and life processes—the growing, the wild-harvesting, the producing, the semi-cultivation, the biological transformations, the delicious collaboration with other species—that emerge best outside of the kitchen.

Knowing what we do not know and who knows it better can only make food more delicious.

### **The edible and the delicious**

Between MAD1 and MAD2, Lars Williams, then head of R&D at NFL, and Mark undertook Nordic Food Lab's first investigations into insects, in the library and in the kitchen. They made fermented garums with grasshoppers and wax moth larvae; used bee larvae in the role of eggs; mapped the flavors of local ants. These ingredients were completely new to them; the work began to engage with the concept of edibility itself.

When we say that something is “edible,” often we mean that it won’t kill us. Sometimes, in a more humorous sense, we mean that the thing doesn’t offend our senses so much that we refuse to eat it. Yet toxicity is a matter of degree (almost anything in a high enough dose can kill) and of processing (many ingredients are benign in one form, but harmful in another: elderberries, for example, or fly agaric mushrooms). Edibility is not a natural property of organisms but a function of amount, technique, and—especially—cultural convention. We set out to understand this last property more deeply, in the hopes of using this conceptual clarity to make insects not merely “edible,” but genuinely enjoyable for us.

In their presentation at MAD2, Mark and Lars posited that “the delineation between the edible and the inedible is deliciousness itself.”<sup>1</sup> I interpret this position as “things are edible if they are delicious,” which could be true—but I think there’s more to the story.

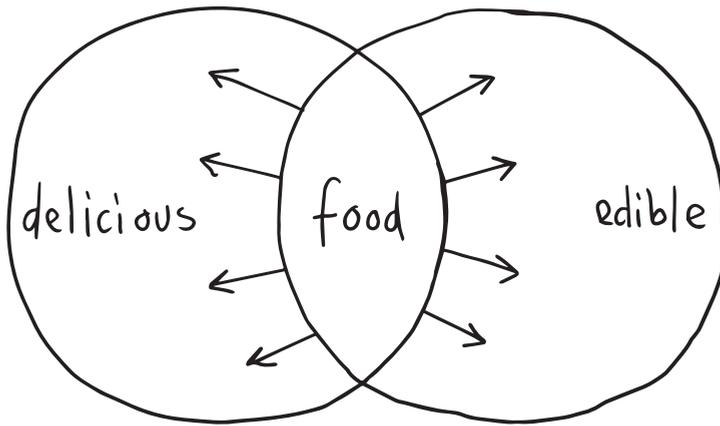
I’ve been thinking about this question a lot since then. Here’s a formulation that I think may more clearly describe the initial idea.

In the middle, where the two sets overlap, are all the things this person eats and thinks are or can be made delicious. This is the category we call “food.” In the remainder of the “edible” set are things like plants that don’t immediately taste that good to her but also won’t kill her in a commonly ingestible amount. On the other side, in the remainder of the “delicious” set, are things that could taste good to her, but which she does not immediately consider edible: let’s say kvass, or really aged butter, or giant waterbugs. In this case, deliciousness becomes a potential property: not just something a food has already but also something it *could* have, under different circumstances.

So just as there are things that are in one sense edible before they are delicious, there are also things that are delicious before they are edible—which is to say, before they are *considered* edible. We try to make the edible things delicious and the delicious things edible for the Nordic palate, expanding its set of food in both directions.

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<sup>1</sup> Video of our presentation at MAD: Delineating the Edible and Inedible”. *Nordic Food Lab blog*. 12 September 2012. Web. 8 August 2014. <http://nordicfoodlab.org/blog/2012/9/video-of-our-presentation-at-mad-2-delineating-the-edible-and-inedible>.



Many insects fall firmly into the latter group, the edibility of which has almost entirely to do with perception, with cultural appropriateness. And to really understand this class of organisms well enough to make them delicious for palates unfamiliar with them, we had to look to the cultures where they are celebrated.

### **Working in the field**

Onstage at MAD2, Mark proposed that creating this new “culinary taxonomy” of insects in the Nordic region could potentially involve just “making it all up... building it from scratch.” His words provide some food for thought, but of course that’s not how cooking really happens, however “new” it aspires to be. We needed to understand some of the existing techniques, and the best way to learn technique is to absorb it firsthand, in its cultural and geographical context.

We could read about digging for lepidoptera larvae in acacia roots in the Australian outback. But books wouldn’t tell us how critically their availability depends on season and rainfall; nor could they show us how to detect the presence of the grubs through signs in the trees and soil, or for how long and where to cook them in the ash of the fire.

We could interview locals in central Mexico about *escamoles*, the seasonal ant eggs that are harvested in the spring and fetch top prices at the market. But interviews alone are not enough.

They would not give us the thirst, from trekking in the dust to find a hive to harvest, fit only for the *escamoleros*' pulque to quench, or have us stung by ants that swarmed our bodies as we harvested the eggs, or let us smell the singular, beguiling smell from the hole in the earth beneath the maguey.

We could find a *casu marzu* from Sardinia, the pecorino colonized by the cheese fly *Piophilactinia casei* and nurtured to ripeness, and have it sent to Copenhagen. But we would not see how the farmers work so closely with their ancient breeds of cows and sheep; how they warm and stretch the curd, pulling it into a bundle and indenting their mark into the crown with a finger; how the flies emerge by glorious accident, and the producers keep it that way; and how the men—for it is mainly men who love it—smear it on thin *pane carasau* and eat it with red wine.

To be sure, in each of these cases we did our preparatory reading, conducted interviews with locals, and brought samples back with us to Copenhagen (in ethanol, for reference). Important as these research efforts are, they merely supplement the core of it, which is personal, sensory, and embodied. Cooks and food producers know this type of learning well, and I think it should be validated more.

Following our senses means that we can embrace the unexpected, which in many cases leads to the most fruitful learning of all. We went to the Australian outback knowing about witjuti grubs, honey ants, lerps, and a few other species, but by far we thought the most remarkable insect we tasted was the bush coconut, a gall of the bloodwood eucalyptus created by a coccid wasp. Prior to encountering this food directly, we had no idea it existed. It looks like a knobby light-green apple or quince and seems to grow on the tree like a fruit. When cracked open, it reveals white inner flesh surrounding a hollow center (hence the English name), and depending on the developmental stage of the wasp and its offspring, one also finds a yellow mother wasp fixed along the central axis; or a layer of small pink larvae, reminiscent of villi or the cells of citrus fruits, coating the inner wall; or the hollow stuffed with silvery pupae, or iridescent young adults ready to fly and start the cycle over again. The mother is juicy, fresh, and flavorful, like melon; the larvae have the subtle taste of raw champignons and occasionally, an almost truffle-like depth of

flavor; the pupae and adults are more savory. One can also eat the white flesh: it is crunchy and resinous, with a mild flavor. Despite technically being wood, it is edible with delicious potential.

We first learned about the bush coconuts from a teacher named Wendy at the local school in Yuendumu, a three-hour drive northwest of Alice Springs in the central desert region, the traditional lands of the Warlpiri. She mentioned it only in passing, and no one was exactly sure what it was, biologically. It was only after we'd repeatedly asked about other insects eaten as food that she told us, "Oh yes, I suppose bush coconuts are insects too." This conceptual difference was a recurring theme in our research: many of these cultures do not group these organisms into a single category called "insects," as we are wont to do (for instance, many of the Kenyans we met ate termites or "white ants," but certainly not "insects"). When we later stumbled upon a eucalyptus with what looked like galls in the higher branches, we immediately investigated, clambered up the trunk, got on shoulders, and pulled some down. On breaking some open back at home, we were sure, based on their form and flavor, that they were some sort of fruit.

That night, Wendy brought in a crateful of galls she had found on her way home, and the next day, one of the friends we had made named Rahab and her family showed us how to open them (carefully, with the blunt head of an axe) and eat the different parts. Only with the knowledge of local people were we able to even recognize this as an insect, let alone to understand how it was eaten and included in the diet.

It is all very well for us to learn how to eat bush coconuts, or to make *tacos con escamoles y nopales*, or the proper age at which to enjoy casu marzu. Yet at least as important is our ability to give back to the people who share their knowledge with us. There are several ways we try to do this. First, over the course of our travels we began to notice patterns and make contacts, which we then could share with our collaborators in the field. We were able, for instance, to connect organic and biodynamic farmers in Kenya and Uganda, who practice similar techniques and wanted more resources and local contacts.<sup>2</sup> Second, we saw similar ingredients being prepared

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<sup>2</sup> Evans, Josh. "Dispatches from the Lab: Exploring the deliciousness of insects in Africa." *The MADFeed*. 19 February 2014. Web. 8 August 2014. <<http://madfeed.co/post/77181381534/nordic-food-lab-mad-insects-africa>>.

using different techniques from region to region. We started applying these techniques across different culinary contexts, often with exciting results. For example, we saw palm weevil larvae prepared in both Uganda and Peru. In Peru we mainly saw them grilled whole over a fire, while in Uganda we saw them gutted, washed, and cooked down hard in a pot, until their fats and sugars caramelized into a sweet-savory bacon-like coating. The Peruvians we worked with told us they hadn't seen that technique before, but they liked it and it became a hit of our Amazon cookout.

Back in Denmark, we took a short fieldwork trip to the island of Livø in north Jutland, where a research farm for organic grain production is experiencing a problem with the European cockchafer, *Melolontha melolontha*. Despite being a different species altogether, its similar structure to the palm weevil allowed us to use some of these techniques when figuring out how best to prepare them.

Working with larvae in a Nordic context as compared with a Ugandan or Peruvian one, the key point of difference has been mainly that of availability. It may have been late in cockchafer larvae season, but it was still much harder to find any workable quantity of larvae on Livø than the equivalent in the forests of Southwest Uganda or the Peruvian Amazon. This clearly illustrated one of the factors that contribute to the diversity of diets around the world. Perhaps we don't eat many insects in Northern Europe, at least in part, because for the most part there just isn't such a high concentration of them. There are reports of the cockchafers being eaten in the past when the beetles swarmed in huge numbers. But such numbers haven't been spotted in a long time, likely due to the changes in the European landscape as a result of modern agricultural practices. The same is true for certain members of the *Zygaena* genus of moth, which are documented as having been eaten in rural areas in Northeast Italy. We tried to see if similar species live in Denmark, and found that they do—but that there are so few of them left that harvesting any for eating would probably be ecologically unwise, even if their sweet sacs of nectar sound very appealing.

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<sup>3</sup> "Alex Atala / MAD1: Insects and Plants: Together for Life." MAD. 28 August 2011. Web. 8 August 2014. <<http://www.madfood.co/alex-atala/>>.

In Alex's talk at MAD1, he describes his excitement over "discovering" these "new" flavors<sup>3</sup>. These flavors may indeed be new for us; yet the more we learn, the clearer it is that in their own cultural context they are anything but new. Learning about these ingredients and techniques is not properly "discovering," coming into knowledge of something for the first time; rather, it involves a gradual initiation into what is already vastly known, and a reckoning with how limited our awareness has been. These flavors and techniques are very old; they are known by traditional societies around the world, and it is likely we all consumed them at some point as part of our ancestral primate diet. We would do well to remember this when it comes not just to insects, but to all of our cooking: that there was always something prior; that it is confluences of events and conditions, not only single minds or efforts, that give rise to newness; and that sometimes the best way to access the most delicious versions of the present and the future is to look for what is already there.

### **Taste diversity and food security**

We are investigating insect gastronomy and the potential of insects in Nordic cuisine, but we should be clear that investigating is not the same as promoting. Certainly there are many cases in which bringing insects into our kitchens doesn't make sense: importing insects from halfway around the world, for example. Technical knowledge about cooking, on the other hand, is transferable and fertile; this is why our fieldwork focuses on technique.

The recent surge of global interest in edible insects might make them seem like a panacea for world hunger and swaths of environmental problems. But the reality is that no one species or set of species create sustainable food systems, just as no single food can nourish and delight us for every meal of every life. I sense a similar narrative arising around insects that has arisen before. Consider soy products: a few decades ago, in the 60s and 70s, nutritionists and food activists alike seemed in broad agreement that soy was going to save the world. High in protein, cheap to produce, easily transportable, amenable to being processed into many different products, soy seemed an obvious cornerstone of a utopian food system. Moreover, as a traditional food in many cultures, soy brought with it ample and well-developed knowledge about how best to prepare and eat it. Today, of course, what we see is far from what the initial industrial soy supporters

posited initially. Over four million hectares of forest in South America alone are destroyed each year for soy production<sup>4</sup>, and at least 80 percent of this soy goes to cheap feed for industrially raised animals, whose meat is then shipped around the world.<sup>5</sup> Mass deforestation, paired with mass-produced, artificially cheap and bland meat, is not a food system at its most delicious or its most robust. And the industrial soy, like industrial corn, is a far cry from the varieties grown and eaten in East Asia and processed based on knowledge to make it nourishing and delicious.

The same may well be happening with insects right now. One of our biggest fears, despite our best intentions and caution about the possible implications, is that our research will be used to further an industrial paradigm already on the rise. This is a narrative that rarely ends well—not for taste, not for ecological resilience, not for cultural diversity.

Some widely-quoted UN Food and Agriculture Organization statistics say that the world population will increase to nine billion by 2050, and that meeting this demand will require increasing food production by 70 percent.<sup>6</sup> Yet the UN World Food Program states that there is already enough food on the planet to feed the global population.<sup>7</sup> Increasing industrial mass production makes sense only if we intend to perpetuate the broken system of overabundant, poor food; monstrous food waste; lack of food accessibility; and cycles of poverty, hunger, and malnutrition. “Insects” in the discourse of global food security are not a silver bullet but simply another swapping strategy, changing an input within a system that is more or less stagnant. The input is trivial when the whole system is broken.

## **The in-between / knowing what we don't know**

In the outback, we dug for honey ants.<sup>8</sup> The soil was dusty and red and colored my hands. In

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<sup>4</sup> “Soy, you & deforestation.” *WWF*. n.d. Web. 8 August 2014.

<[http://wwf.panda.org/what\\_we\\_do/footprint/agriculture/soy/consumers/](http://wwf.panda.org/what_we_do/footprint/agriculture/soy/consumers/)>

<sup>5</sup> “Soy, you & deforestation.” *WWF*. n.d. Web. 8 August 2014.

<[http://wwf.panda.org/what\\_we\\_do/footprint/agriculture/soy/consumers/](http://wwf.panda.org/what_we_do/footprint/agriculture/soy/consumers/)>

<sup>6</sup> “How to Feed the World in 2050.” *United Nations Food and Agriculture Organisation*. n. d. Web. 8 August 2014.

<[http://www.fao.org/fileadmin/templates/wsfs/docs/expert\\_paper/How\\_to\\_Feed\\_](http://www.fao.org/fileadmin/templates/wsfs/docs/expert_paper/How_to_Feed_)

<sup>7</sup> “What causes hunger?” *United Nations World Food Program*. 2014. Web. 8 August 2014. <<http://www.wfp.org/hunger/causes>>.

<sup>8</sup> “Nordic Food Lab: On the hunt for honey ants in the Australian outback.” *The MADFeed*. 17 April 2014. Web. 8 August 2014.

<<http://madfeed.co/post/82996128280/nordic-food-lab-honey-ants-outback>>

the sun and the dry quiet, our elder guide Coral dug with her crowbar, methodically reaching the galleries a meter down where the repletes, specialized workers used as living food storage, hung with their abdomens engorged. She lifted up her hand and the sun caught the small amber orbs in her palm. Taking them by the head, we sucked out the nectar in a tingly pop, sour and fragrant like wild strawberries and demerara sugar. For any cook to try to improve on how those ants tasted right there, in that form, warm out of my dusty hands, would not only be a challenge but would miss the point.

We have all had experiences like this, when the best eating experience lies in the whole organism: the peach straight off the tree, peas fresh from the pod. This can be a sticking point for cooks, whose job conventionally relies on technique and transformation. But I think that means we need to reconsider what a cook is actually doing.

The anthropologist Claude Lévi-Strauss famously used the cook as a metaphor for the mediator between the realms of the “natural” (‘the raw’) and the “socialized” or “civilized” (‘the cooked’). This binary is clearly outmoded.<sup>9</sup> Alex Atala has proposed an interesting reinterpretation of this distinction. He notes that in Brazil—incidentally the country where Lévi-Strauss conducted much of his research on structuralizing tribal mythologies—many cultures distinguish the natural material and the cultured one not by cooking, but by fermentation: a natural process that constantly occurs without human input or intervention, but which we have tinkered with and now also use for our own purposes. This third category presents something in between, something that is neither quite “nature” nor “culture.” Westerners’ obliviousness to this understanding of “cooking,” Alex posits, has been part of the reason why we regarded these cultures as “savage” for so long.

This in-between space not only breaks down the binary, but also reveals the ambiguousness of the categories in general. This ambiguity has huge implications for how we interact with the diverse methods of food production and preparation. For example, “the wild” and “the cultivated”

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<sup>9</sup> Lévi-Strauss, Claude. *Anthropologie structurale*, Paris: Plon, 1958. Print.

can be seen as analogous to the raw and the cooked. Yet many of the most delicious things often spring forth from the space in between: the semi-cultivated, the re-planted, the opportunism of organisms. Bees are one of the most immediate examples. Bees and humans have co-evolved with each other, though bees are neither fully domesticated nor wild. There is a preponderance of similar examples in the insect class: wild-managing *escamoles* to safeguard their survival from overharvesting; felling dead or dying palm trees to facilitate their colonization by palm weevil larvae; growing plants in dense polyculture to create ideal habitats for giant tobacco crickets. We can see even more of the in-between in our interactions with the plant kingdom: taking wild plants and replanting them in our fields, without selecting for seed; wild plants growing in profusion in disturbed and marginal areas, like hedgerows, roadsides, and rewilding industrial land. We are not growing the plants directly, but advertently or inadvertently creating conditions of which they take advantage.

Even if we do not realize it, we change “nature,” we cook the “raw,” simply by existing and doing what we can to perpetuate ourselves. The honey ants emerge in the desert landscape because they serve the function of storing energy for the hive during unpredictable periods of dryness. The desert landscape itself emerged out of methodical burning to manage the landscape and stimulate diverse food production, a land management strategy developed by Australian aboriginals over the last 40,000 years.<sup>10</sup> Now, even the seemingly simple act of digging up a honey ant and sucking out its concentrated nectar is not a purely “natural” act—there are thousands of years and layers of cultural phenomena and knowledge that have made that moment happen. It is time for us to recognize a different part of our job description—not as grand mediators, but as one of many players in a messy system of natural culture that gives rise to the diversity and deliciousness in our diets. Our kitchens are but one of many areas where this endlessly complex set of processes plays out.

As eaters, we must also pursue this knowledge and use it to examine our expectations. Different foods are best appreciated in different ways, and our contemporary view of what restaurants

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<sup>10</sup> Gammage, Bill. *The Biggest Estate on Earth*. Sydney: Allen & Unwin, 2011. Print.

can and should do is limiting our ability to enjoy this diversity. For example, it is somehow not enough to serve a plate of figs or the perfect unadorned peach for dessert. Part of this insufficiency lies in diners' expectations of restaurant eating (in this globalized Anglo-Saxon paradigm, at least) as being primarily "chef-driven"—we pay for food not just as sustenance nor even for phenomenal quality or distinction but primarily for food as the consumable output of the chef's mind. I understand the desire for intellectual and aesthetic quality in dishes, but if we are talking about eating the most delicious food, this is not the only way to go about it. We should challenge and broaden this expectation of restaurants—we should recognize that the best food does not happen solely or even primarily in restaurants, but in the field, the forest, the desert, the sea, the cellar, the workshop. This knowledge can change our cooking for the better.

When we recognize that we as cooks are not the grand mediators, possessing the ultimate oversight of transformation, we allow all of these other modes of food production to come to the fore. Our kitchens become not the centralizing and civilizing monolithic nexus of culture, but one node in a web of diverse ways of making and cooking and eating. This decentralizing is already happening, and we should push it further, because it is a key to ensuring the diversity of ecologies and cultures which gives rise to delicious food for everyone.