CULTURE CLUB

It once took ants, plants, and rainwater to make yogurt in Bulgaria. One group of researchers is working to bring the traditions back.

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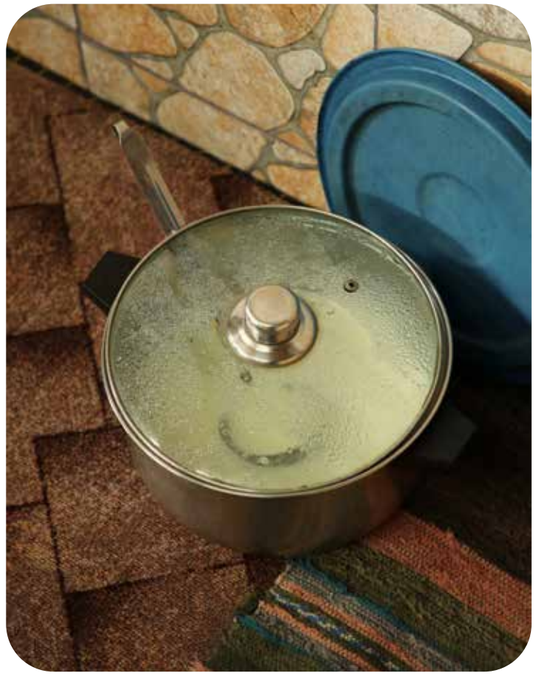

A batch of just-warmed cow's milk cools back down to room temperature on the kitchen floor.

Winding roads snaked through old-growth woodlands that scraped the sky on all sides around us. Mountains split the horizon and bouldered rivers criss-crossed our path. We were packed into a hatchback heading south from the Bulgarian capital of Sofia, venturing not just to a specific location—Nova Mahala, an ethnically Turkish village of about 2,000—but to a specific time. May is Hıdırellez season, a festival held throughout the Balkans and the Middle East to celebrate the renewal of life each spring.

In Nova Mahala during Hıdırellez, the villagers observe customs unique to their town: They sport small bunches of foraged flowers as crowns, adorn their barns with budding branches, trek communally to the town's highest peak, and pay special attention to that staple of the Bulgarian table, yogurt. It was yogurt that had brought us here—we came to investigate the recreation of recipes lost to time, those fermentations of milk once initiated by ants, scented by nettle roots, and fed with spring rains.

To make yogurt, milk must be inoculated with a consortium of bacteria that can consume the milk's sugars quickly enough to produce enough lactic acid to keep pathogens at bay. All that's required is a container, some milk, culture, warmth, and time. This ancient technique represents an early form of microbial domestication, which would have coincided with the beginnings of the agricultural revolution.

But that's too clinical an explanation. To the people of Nova Mahala, yogurt is not so much a product as an ongoing creation—of a life-sustaining food, but also of familial and cultural identity. Cows, which, just a generation ago, used to rival the count of human residents, still populate the village in substantial numbers. They're often housed in two-story barns at the back of properties, and they're seen—and spoken to—as essential members of the family.

The three of us each came to Bulgaria with our own way of understanding the world. Veronica, a scientist uncovering the ecology of little things like bugs and bacteria, initiated the trip through her work and conversations with researcher Rob Dunn, thanks to whom we all share a connection. David, a chef, fermenter, and food scientist, tagged along out of curiosity, moonlighting as the trip's documentarian. Sevgi, an ethnographer who traces traditional foodways and old forms of fermentation, led the expedition. Her family, and our hosts, maintain deep ancestral ties to Nova Mahala. It was in her well-travelled Ford Focus that we were carefully navigating the last stretch of gravel road, up the driveway to a modest brick bungalow built in the '60s and extended bit by bit every decade since.

ALL THAT'S REQUIRED TO MAKE YOGURT IS A CONTAINER, SOME MILK, CULTURE, WARMTH, AND TIME.

Sevgi's family waited outside. Mehemet, her great uncle, is a former herder who carries with him intimate knowledge of the land and livestock. A man pushing 80, he has the spirit and stamina of a 20 year old. Musherrem, his wife, is a master of hospitality who fed us the most incredible Balkan specialities: moussaka, and tarhana soup, and sarma, these juicy stuffed packets of rice and meat, rolled tight like dolma in her own fermented cabbage. Fatma, their daughter, had her mother's knack for cooking, yeasting dough for cheese-filled bread in the morning before setting off to work as a deft seamstress at the local textile factory. They have called Nova Mahala home their entire lives, with a family heritage and Turkish roots that run back hundreds of years in the region.

Two centuries ago, herders spent extensive time away from their homes, constantly moving with their livestock to fresh highland pastures. They relied on yogurt to preserve the milk of those animals on the go, using wild sources of microbial life like ants, nettles, and rain water to start the transformation. In fermentation, it's impossible to disentangle culture from cultures, and these wild sources continue to hold deep significance during Hıdırellez. Locals hang nettles off their belt loops to bless the spring. Pine needles from the mounds of wood-ant colonies are collected to bring bounty to the animals, plants, and community during the growing season. Spring water that flows from tributaries in the surrounding mountains is channeled to memorials in lieu of gravestones, where villagers can remember their loved ones each time they fetch water.

But nowhere can truly be in two *whens* at once. Modernity has Nova Mahala in its grips, with its ancestral practices of fermentation falling, well, out of practice. What we had to resolve—at both a microbiological and an ethnographic level—was the past itself. Mehmet and Musherrem, like others in the village, had only heard stories of

Jars of milk destined for the middle of an ant hill.

making yogurt with ants or nettles; they'd never done it themselves. That's where our investigation became a collaboration. We worked with them to tease out the history of their home.

On our first morning, at 7 am, we stumbled out of our rooms and met at the barn out back to find Mehmet, his cow, and her calf already wide awake. Mehmet's hands encouraged a thin stream of milk to flow from the teats to some cups he had. The opaque liquid that hit our lips was categorically different from anything available in a grocery store: rich, warm, foamy, sweet, and slightly sticky. It tasted of the earth and the crisp air and, importantly, of an animal, one that was craning her neck to observe, with deep intent, the interlopers parked at the barn door. Mehmet filled a ten-litre bucket in about a minute's time—easy work for a "retired" herder who once tended 250 sheep. From there, the milk was handed off to Musherrem to live by the hearth in the kitchen, fed by the heat of firewood harvested from the dense forests nearby.

Ordinarily, Musherrem would kickstart fermentation by mixing a few spoonfuls of a prior batch of yogurt into the milk. We wanted to replace that starter with insects, not only adding ants to milk but also burying a jar of milk *within* an ant colony overnight. Ants are prized in cuisines from the Amazon to Australia for their fruity and piquant formic acid, which they employ as a defence mechanism. While the acid of a few ants is hardly enough to curdle a jar of milk, they, like all organisms, carry microbes on and in their bodies. Rumours stretch throughout the Balkans of ants being used as inoculum and their hills as incubators.

In advance of our arrival, Mehmet, Musherrem, and Fatma all undertook reconnaissance missions to find a few suitable wood-ant colonies around town. Our best bet was a massive ant mound two-

Nearly 80 and resisting retirement, Mehmet carries a tub of ants down a mountain, after burying would-be yogurt in their colony.

THE RAINWATER YOGURT SMELLED LIKE FRESHLY WHIPPED CREAM WITH A HINT OF GREEN ALMOND.

The experimental yogurt made with the help of wood ants tasted mild and sweet, with a note of grass-fed fat.

thirds of the way up one of the village's mountains. Before trekking to meet it, we prepared the morning milk. Musherrem heated a couple litres on the hearth until it was, as she advised in Turkish, "warm enough to bite your pinky finger." Veronica dropped a few live ants she'd gathered from the colony the day before into three milk-filled jars. Mehmet then fastened cheesecloth over the jars, securing their necks with chicken wire and placing them in an insulated bag to keep warm.

After 40 minutes of hiking, we encountered the ant colony on the edge of a pine forest. Mehmet rolled up his sleeves and plunged his bare hands into the heart of the mound. As he slowly made a hole, ants crawled up his hands and arms, spitting their fragrant formic acid at us, enraged at the intrusion. Mehmet brushed off the ants and placed the jars in the hole. The ants began to furiously investigate their colony's new furnishings, spreading their microbes all over the cheesecloth in the process. We then replaced the pine needles over the jars and made our way back down.

After lunch, we began our second experiment, nettle yogurt, which mixes mashed nettle roots with milk. While the enzymes in nettle leaves are known to work as a vegetarian coagulant in cheese-making, villagers told us it was the roots we were after. Here, microbes from the soil and plant are thought to play an important role. Mehmet plucked a medium-sized nettle from the outer edge of his garden, then muddled the root on a cutting board with the blunt end of a piece of firewood. We divided a tablespoon of the roots between a couple jars of milk, lidding and setting them on the hearth's mantle.

The final practice, spring-water yogurt, was the one most deeply connected to Hıdırellez. It involved collecting rain leading up to the holiday, from the new moon to the full moon. According to grandmotherly lore, an existing yogurt culture should be mixed with spring rainwater to refresh it—sounds superstitious, but recent studies show that rainwater actually has its own seasonal microbiome. Conceptually, this seemed like the most sure-fire experiment. The yogurt, made like any other batch in Musherrem's kitchen, had a chance to add new voices to its choir without sacrificing any of the stars from its song.

The following day, we marched back up the mountain to retrieve our yogurt from the ant colony. As we peeled back the brown pine to extract our jars, it became clear that what once was milk had congealed into yogurt. We left some pieces of bread on top of the mound, feeding the colony as it was feeding us, and headed for the house, where we sampled the joint efforts of this unlikely coterie of locals: the cow, the ants, their microbes, Musherrem and Mehmet. Within the jars, loose curds, pleasant and neutral, were suspended in sweet milk, mingling with the pronounced taste of grass-fed fat.

The nettle yogurt was slightly more acidic and had the consistency of a fresh cheese. Whatever microbes had jumped from the root to the milk had definitely gone to work. Although some of the flavours were slightly off-putting, a bit bitter, David pointed out that the yogurt could make a delicious cheese if the process was a little less wild and the fermentation slightly warmer and shorter. Fatma said it was not uncommon to give new life to a less-than-perfect batch of yogurt this way, heating it to further curdle the proteins before hanging to separate it from the whey.

Finally, we tried the rainwater yogurt. After a day and a half of fermentation, it smelled like freshly whipped cream with a hint of green almond. Its taste was milkily delicious: sour, lactic, crisp, clean, and ever so slightly nutty. It was a fantastic yogurt, and while we might have been slightly biased, it absolutely tasted renewed.

On the final day of Hıdırellez, we milked the family's dairy cow in the evening, and practiced the rituals of yogurt-making one last time, before packing up our notepads and petri dishes for the journey home. Our visit taught us that these once-forgotten recipes could only be created by the collective wisdom of our own unlikely coterie: Mehmet's knowledge of the mountains and cows, Musherrem's knowledge of yogurt, Sevgi's knowledge of Bulgarian culture, Veronica's knowledge of ants and their microbes, David's knowledge of the science of fermentation. But this wisdom, now brought together, will continue to live within us all, wherever we find ourselves. Before leaving, Veronica and David filled a couple plastic test tubes with the rainwater yogurt as souvenirs in order to ferment their own yogurt at home. What better way to celebrate Nova Mahala than by bringing it back to life for breakfast, over and over again. **S**

Samples of rainwater yogurt collected in a polystyrene test tube to bring home for future batches of yogurt.