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Intervals of Confidence: Uncertain Accounts of Global Hunger

Abstract

Global health policy experts tend to organize hunger through scales of "the individual," "the community," and "the global." This organization configures hunger as a discrete, measureable object to be scaled up or down with mathematical certainty. This article offers a counter to this approach, using ethnographic cases to illustrate that the calculated referent of "hunger" does not hold stable. In the highlands of Guatemala, where obesity has become a matter of concern, many people treated hunger as a sensation connected to family and history. For doctors working in the region, hunger was determined through body mass indices and global risk statistics. For global health experts it was different still, operating as an indicator derived from agricultural and population data. I draw these different, yet connected, versions of hunger together to explore dilemmas of scaling an object that isn't solid but is made and unmade variously. This allows me to illustrate that global hunger is not a summation of hunger in the world, but its own version of hunger. I further suggest that "multi-object ethnography," which allows for the persistence of uncertainty, can help to develop policy responses to hunger(s) that will, in some cases, be more appropriate and effective than scale-based evaluation.

Keywords: Scaling, Uncertainty, Hunger, Obesity, Global Health, Metrics and Evaluation,

Multi-object Ethnography

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Intervals of Confidence: Uncertain Accounts of Global Hunger

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Intervals of Confidence: Uncertain Accounts of Global Hunger

Global scales, situated uncertainties

Reference to scale is widespread within the global health community, which deploys scales as an organizing device to link the micro to the macro, the local to the global, and that which is peripheral to that which is central. Whether scales are conceived as discrete hierarchies, like rungs on a ladder, or as nested within one another, like Russian dolls, scaling is used as a way to stage and relate fixed, bounded spaces (Marston et al., 2005: 417; see also Herod and Wright, 2008; Latour, 2005). While scaling can take diverse forms – scales can, for example, organize sound, color, and even of modes of belonging (Howitt, 1998; Jiménez, 2005; Yates-Doerr, 2014b) – global health approaches to scaling are typically metric-based and calculative. This allows experts to configure "scaling up" as a predictable multiplication in quantity—the replication of a stable object into a mappable, singular world.[i]

Strathern writes that the concept of scaling is used "when the object measured is

independent of the means of measurement" (1999: 204-205). Indeed, as elaborated below, global experts often spoke of scaling as a means of translating a singular, knowable, global hunger across numerous sites. In contrast to this approach, this article approaches hunger through a series of loosely interconnected cases—each relating simultaneously to distant networks and infrastructures as well as intimate lived experiences. Here, hunger is not a stable object out there in the world to be objectively measured and whose strategies for treatment can thus be naturally and neutrally scaled up or down. It is instead something that emerges variously and particularly from site to site. In this frame, some versions of hunger become more salient—not because they are able to seamlessly replicate across scale, but because of the contexts and situations that they help to bring into being.

I conclude the article with a warning against the common depiction of ethnographic fieldwork as adding local knowledge to global policies. This caution has been voiced elegantly by others in the context of globalization discourse (Tsing, 2005; Wilk, 2006; Orta, 2004; Escobar, 2001) but it has been made less explicitly when it comes to the presumed division of life into scales that pervades the field of global health (but see King, 2004). I draw upon fieldwork cases to suggest that the organization of hunger through scales too quickly closes down uncertainties that, for the purposes of intervention and treatment, might be usefully left open for inquiry. Insofar as scaling operates through a numeric system of certainty, this obscures the multivalent forms that hunger can take, which can be problematic for effectively addressing the hungers that people, practitioners, and even policy makers are grappling with. In highlighting what may be at stake when hunger and its treatments are understood in units of scale, this article makes a case for the importance of keeping alive the inconsistencies and ambiguities of hunger— in Haraway's words, of "staying with the trouble" (2010).

Methods for Multi-Object Ethnography

This article is based on several years of ethnographic research examining the United Nations' (UN) concern for, and approaches to, addressing global hunger. Between 2011 and 2014, I attended roughly six international health and food security conferences per year, conducting formal interviews with relevant experts in attendance, as well as informally conversing with conference participants over the breaks and meals.[ii] I have separately conducted formal interviews with approximately 35 global health officials and scientific experts at their offices. The paper is also informed by a period of 16 months (Jan 2008-June 2009) of participant-observation fieldwork in a region in Guatemala where rates of chronic malnutrition are reported to be among the highest in the world (World_Bank, 2010) and where obesity has also emerged as a matter of scientific and social concern (Yates-Doerr, 2015)

I have organized the article in two parts. The first analyzes the role that nutrition science has historically played in configuring hunger as a singular, stable object, thereby positioning hunger to be understood by the UN community as a *global* problem. I suggest that this approach has encouraged intervention strategies focused on the distribution of nutrients into a mappable, scalable world—a world that can be divided into quantifiable units in which many small/local parts adds up to a large/global whole. It has also encouraged evaluation techniques reliant upon measurement that have certain knowledge about the world as a desirable outcome. As one UN analyst explained this, "If something is unit-less, it is meaningless." "Meaning," as used here, was a technical term dependent on whether statistical calculations fell within specific numeric parameters. When these parameters, referred to as "confidence intervals," were met, uncertainty

transformed into certainty and knowledge emerged as reliable. In this now-stable form, hunger could be multiplied and divided across time and space, scaled up or down without changing form.

Despite a widespread association of knowledge with stable units and calculable metrics within the global health community (eg. Murray et al., 2012), many scientists with whom I have spoken have suggested that the policy challenges posed by metabolism's complexities might also require a different methodological approach. To respond to their concern, in the second part of the article I examine three cases of hunger as it materialized in my fieldwork. The first case is based on interview material with a scientist who regularly consults for the United Nations' Food and Agriculture Organization; the second case draws on ethnographic research carried out in a community nutrition clinic of a Guatemalan hospital; the third case comes from a home visit with a patient from this hospital who spoke about hunger as she lived with it. I have chosen cases that might be seen as fixed positions at a particular scale (global, community, local), so as to explicitly denaturalize this organizational technique. The cases are each related: what happens in the policy boardroom shapes the possibilities for the clinical consultation, which also affects a specific woman's engagements with eating. But though each case pertains to hunger, all take a different object of hunger as their referent. As a result, the cases don't present the same object at different scales, but rather different versions of hunger.

I adopt the concept of version from Annemarie Mol. In contrast to a common framing of reality as a singular entity composed of layered parts that can be neatly divided or added together, Mol, drawing upon a wide array of empirical studies, shows how scientific practices enact different versions of reality. These versions "do not occupy a layer in a *spatial* pile" (Mol, 2012: 120). Instead, versions emerge in different situations. The resultant realities are not mere

social constructions; they have material histories and produce tangible, *real* effects.[iii] Still, they cannot be summed into universally applicable (global) facts, but instead require attentiveness to the specificities of particular circumstances.

The research I draw on for this paper has been carried out in several sites, owing a debt to a tradition of multi-sited fieldwork (Marcus, 1995; Marcus and Fischer, 1986). A study of *versions,* however, raises a challenge to the holist imagery of local/global connection that pervades multi-sited research. Multi-sited methods typically aim to follow an object through numerous sites so as to ultimately yield knowledge about *the world system,* which is thus instantiated as a mappable totality "out-there" (see, for this critique Candea, 2007). When attending to versions, however, one cannot unambiguously track or trace an object through the world, as the object that might be traced does not remain fixed or constant. This article is thus a contribution to a burgeoning field of what be might termed *multi-object ethnography.* This is a methodological approach that does not have knowledge of "an object" or "the world" as its goal, but is instead invested in examining the specificities of realities, and the tensions and connections that bring different realities together. It is a method that does not aim to eliminate uncertainty, but rather to open up – and thereby make space for – ambiguity, contingency, entanglement, and variation.

Part One: The replication of hunger

Fears about rising population rates and climate change have coincided with mounting international attention toward global hunger. The first of the UN's Millennium Development Goals (MDGs) was to "eradicate extreme poverty and hunger." In the Sustainable Development

Goals targeting the "post-2015 era," hunger has also emerged as a key concern for global governance, creating a sphere of calculability that links national and individual forms of responsibility to political and financial authority (see Ilcan and Phillips, 2010).

At present there is no commonly accepted definition in the UN for what hunger is or how to treat it. The UN's Food and Agriculture Organization (FAO) measures hunger through daily caloric intake – hunger is the consumption of fewer than 1800 kilocalories a day[iv] – and calculates hunger at a global scale through data on national population size and agricultural production/imports. The definition of hunger employed by the UN's World Food Programme draws attention to the "hidden hunger" of micronutrient deficiencies, and their household surveys track what foods people eat. The UN's World Health Organization (WHO) aggregates anthropometric data including body mass index and mid-upper arm circumference in its assessments of hunger. Still other UN experts argue for the reliability of subjective reporting, making use of qualitative surveys that record perceived levels of satiety (cf. Kennedy, 2003).

Each of these approaches has a rationale and history, but this diversity in calculation techniques is often treated as a problem. Meetings regularly stress a need to refine terminology and there is widespread caution to keep definitions of hunger "tight" (Mason, 2003). For many experts, meaningful comparison – which is necessary for determining where interventions should happen and for evaluating whether or not they are successful – is only possible if hunger has an "underlying, independent dimension" wherein hunger exists irrespective of decisions made about exactly what to measure (CFS, 2011). After all, they can only judge one indicator as more accurate than another if the indicators reference the same concern (see Merry, 2011).

The idea that hunger has a physiological and universal essence has been buoyed tremendously within the sphere of global governance by the science of nutrition, which has

historically framed food and human activity through nutrient equations (cf. Carpenter, 1994). These equations treat nutrients as "building blocks" to be added together or subtracted from one another without a transformation of their essential form (CFS, 2013a). Nutrients thus operate as "immutable mobiles," a term developed by Latour (1987) to refer to entities that appear to be able to travel unchanged. The association of hunger with "immutable" nutrients has served to constitute hunger as a singular and measurable thing. In a study of British food policy, Vernon notes that to justify state intervention, "hunger had to be more than just a vague category of sympathy; it had to be made amenable to precise measurement" (2005: 10; see also Arnold, 1994; Cullather, 2010). As a pair, hunger and malnutrition form a productive synergy: while international health organizations often conceive of hunger in general terms as the way that any human body, regardless of race, gender, sex, nationality, or other forms of social difference signals "that is it running short of food and needs to eat something" (SUN, 2010), the metrics of malnutrition bestow quantitative authority upon this need by offering a seemingly neutral means of evaluating whether it is met.

That hunger is calculated through nutrients enables hunger to be scaled up, so that an individual's need for food can become multiplied as a need experienced at a macro scale. Nutrients, when understood as measureable units, have allowed for the hunger of the body, the community, and the nation to be configured as a hierarchical "sequence of steps" (Linn, 2012). As the UN-affiliated organization *Scaling Up Nutrition* (SUN) explains this, individual-scale nourishment makes for a strong globe, while it is also the case that "coordinated global action" against hunger should ensure "that every mother, child, and family can realize their full potential."[v] In other words, the unit of the nutrient can be aggregated to form the solution to global hunger, while at the same time global-scale nutrition could be disaggregated into nutrients

that would treat the local-scale hunger experienced by individuals. We see here that insofar as scaling is a metaphor, it is not without material effects. For when hunger is imagined as mappable across scale, the sought after solutions are in turn mechanical and technical. To date, most of the UN's hunger-interventions lie in the realm of the calculable such as increased vitamin and mineral intake through supplementation, expanded fortification projects, and improved therapeutic feeding (SCN, 2010).

The configuration of hunger through the common denominator of the nutrient, in addition to encouraging metric-based interventions, has also encouraged the global health community to seek metric-based modes of evaluation. Techniques of evaluation and the knowledge, data and evidence they entail can take myriad forms—a claim also advanced by some biostatisticians (eg. Lewis, 2007; Green, 2006) and a matter to which I will return shortly. Yet official calls for increased evaluation of "the problem of hunger" and interventions aiming to grapple with this problem focus almost exclusively on the need for better metrics (eg. SUN, 2010; CFS, 2013a; SCN, 2010). Social scientists have long argued that these metrics do not simply and neutrally report upon the world, but also craft a vision of a commonly-shared globe that is connected through a language of numerical truth (see Asad, 1994; Ferguson and Gupta, 2002; Marques, 2004). For example, as Phillips and Ilcan astutely show in their research at the FAO, calculations of hunger that seemingly represent hunger in the world also produce an imagery of *a* hungry world— with both hunger and the world configured as singular (Phillips and Ilcan, 2003; see also Jarosz, 2011). The effect is iterative: calculations appear to be the authoritative mode of knowledge production about hunger, thereby furthering demand for calculations.

In interviews and informal conversations, however, I have found that global hunger experts consistently raise doubts about the efficacy of approaches exclusively reliant upon

calculative certainty. Given the dynamic biosocial entanglements of starvation with obesity, immunological and metabolic illnesses, human and agricultural health, and so on, they highlight a pressing need for research methods that can help to articulate, and not simply control for – and by extension mitigate – the complexities of hunger. In laboratory sciences, upon which much scientific knowledge of nutrition is based, it is desirable that findings be repeatable, controllable, and exact (Knorr-Cetina, 1981). In contrast, policy sciences must concern themselves not only with knowable truths, but practical improvements. This is a field of science necessarily invested in the complexities of *care*, and when it comes to care, laboratory replication may not be the most useful, or reliable strategy (Adams, 2013; Pigg, 2013; Mol et al., 2010; Waldby, 2012). Amid calls for better models and data, and a desire for information about hunger that is finite and certain, there is also acknowledgement that the science of intervention may demand a different set of techniques. Ian Whitmarsh has noted in his research on public health responses to asthma that "it is only in their lack of universality that social institutions have efficacy" (2008: 80). Numerous policy experts with whom I have spoken have echoed this sentiment, as did one scientist who told me, by way of underscoring the importance of grappling with hunger's cultural specificites, *"21st century problems demand a rethinking not just of what we research, but how we research."*

In what follows, I approach global hunger not through the "grand narrative" implicit in a global system that can be scaled up or down with the calculative precision of certainty (Law, 2004), but through a series of ethnographic cases that aim to keep alive the contingencies and instabilities of different versions of hunger. Whereas uncertainty is treated within many global health frameworks as a sign that knowledge and meaning have yet to be achieved, in the cases that follow, uncertainty – which in my usage bears family resemblance to a cluster of terms

including ambiguity, heterogeneity, ambivalence, indeterminacy, instability, and contingency – is rather an inevitable part of life. I show that academic engagement with the particularities of the everyday offers an alternative method to mathematical scaling for the evaluation of hunger and design of intervention. In doing so, I suggest that the persistence of uncertainty may not, after all, be the liability it is often made out to be.

Part Two: *Versions of Hunger*

Case 1. The policy office

In an office with windows looking out on the arrival and departure of airplanes, an expert scientist reviewed the FAO's calculations of global hunger with me. The definition of hunger he worked with seemed, at first glance, straight-forward enough: "*The number of people who do not consume enough calories for their physiological needs.*" He went on to explain that embedded within this simple definition, however, was a seemingly endless chain of calculations where judgments about what counts must be made. *Must be made*— he expressed this here in the passive voice not because experts are passive, but rather because it was not easy to discern how they made their decisions, not even for those who had the power to make them.

This expert consulted for the FAO, whose policy analysts had decided to base their number of hungry people in the world on three sets of data: one that tabulated calories nationally, one attentive to population-specific caloric requirements, and one that made use of household surveys to assess how calories were distributed in homes. The first dataset employed information on the production, importation, and exportation of food commodities, along with the calorie content of the food, so as to calculate total availability of calories in the country. The second

examined the population structure in terms of age and sex. Drawing upon cutoff points of the minimum caloric requirements for these different groups, and the distribution of these groups within the population studied, they then assessed whether the total calories available met the caloric needs of the population. Finally, his team collected survey data to account for variation in how the calories that were available were locally distributed.

The expert acknowledged to me that flaws existed in each of the methods. It was not easy to integrate concerns for food access, availability, and utilization (which the FAO had identified as three aspects of malnutrition) into a single metric, and to also include in this metric the three scales of analysis – the nation, the community, the household – from which they drew their data. This was the terrain of what he called *silicon technologies*, referring to the ever-more-sophisticated computer algorithms used to assemble hunger indicators. He admitted that these were still in nascent stages – their power still in the realm of fantasy – but the hope was that as computers began to write the models, they would strip away human bias bringing the global community closer to the truth of hunger.

Yet as he said this, he also noted that household survey data gave him pause. Emerging reports highlighting the complexity of metabolism were calling into question not just this model for measurement, but this method of modeling. Scientists were finding that nutritional disparities existed within households so that overweight mothers often had underweight children (eg. Solomons, 2009; Martorell et al., 2001). The scientists were encountering evidence of what they called over-nutrition and under-nutrition within the same household—and even within the same individual. The expert shook his head as he referred to the "developmental origins of health and disease," a hypothesis that sought to explain why many who measure as underweight become overweight as adults (see Gluckman and Hanson, 2006). In this hypothesis, hunger was a

temporal condition imprinted in cellular metabolism that could be transferred across generations. A result of the intergenerational transfer was that metabolic regulation of calories and nutrients differed from body to body, as well as within any given body's regulation over time. Confounding the common sense wisdom that a calorie was a calorie and could thus be straightforwardly spread into the world, researchers were finding that calories had different effects for different people and in different places (see Nestle and Nesheim, 2012). They spoke of cellular and metabolic "programming," but these were programs that would write and re-write themselves—programs so detailed that it was beginning to seem nonsensical to speak in terms of linear determination (see also Landecker, 2011; Lock, 2012; Niewöhner, 2011).

Understanding the expression of health and disease at what the FAO expert called "the scale of the household" required looking into histories of hunger. But it was not clear to him how to incorporate history into his calculations. Even if they could accurately record everything a person ate over the course of a day (a measurement that was self-evident in theory yet extremely difficult to obtain in practice), it was unclear how to account for variation in metabolic rate across multiple people or even the same person over time. Context and history were important, he readily admitted, but they were also notoriously difficult to contain within the measures they relied on. They required communication, but this was unsettling for in communicative practices, evaluation proceeds through the imprecision of translation and not through smooth conduits connecting bounded units (see Reddy, 1979). Meanwhile, his institution was accustomed to working in the international language of metrics, where the ambiguities of communication were traded for the certainties of calculation. Given that the FAO was tasked with addressing highly variable health concerns with limited resources, there were practical reasons for prioritizing techniques that allowed for quick cross-cultural comparisons (see also Adams et al., 2014). It

remained unclear to him how he could represent context and history, which have no fixed bounds, within a mode of figuration dependent upon solid, stable boundaries. He recognized that by ignoring context and history, a method that claimed precision was rendered inaccurate; but their incorporation would also unravel the methods he was accustomed to using.

He said that it had been decided – another statement in passive voice – that they would use quantities of calories and body mass to represent hunger in the world. Though blunt, they hoped this would render meaningful patterns. But he and his colleagues were nonetheless finding that the determination of hunger through measures of mass and calories was also turning in upon itself: those with enough calories in their diet were still caught in intergenerational cycles of hunger in which a household's hunger could not be known simply by measuring the food within its walls. Even with the guidance of complex algorithms, the shift between scales of national, regional, and individual was running into problems.

"All models are wrong, but some are useful," he said to justify the application of a model for global hunger that he knew to be filled with holes. As he imagined it, the model needed to become more sophisticated. This would be a challenge, but as silicon technologies became more advanced he hoped the model would be able to sufficiently approximate the reality – the "underlying, independent dimension" – that it was trying to represent. At the same time, he also feared that algorithms notwithstanding, the calorie-based model of hunger was breaking. It simply could not handle all the variation that it was encountering. It had no room for calories that were not *just* calories, nor numbers that did not easily add up. Global hunger, which was meant to be a summation of all sorts of individual hungers in their various geographic places, was proving to be a different kind of hunger.

Case 2. The hospital clinic

The doctor in the outpatient clinic looked up from the chart the assistant had placed on the desk to see the patient adjusting her clothes. The *huipil* had to come off for the weighing since it would disturb the accuracy of the measure. Not that in this case precision was entirely necessary. The number the doctor stared at – a Body Mass Index (BMI) of 34 – was a clear sign of obesity as defined by WHO guidelines, which the practitioners at the clinic were trained to follow (but see Yates-Doerr, 2012).

He showed the patient the chart of the BMI, explaining briefly that his recommendations were made from a calculation of her weight and height (see Hacking, 2007). He had told me before that he worried that patients wouldn't understand the numbers and, indeed, he skipped over most of the details, settling instead on the fact of obesity. *You are too heavy,* he said, pointing toward the measure. And then, *You must try to eat less.* She was the fourth patient with numbers so high that day, each of them identified in their charts as rural, Indigenous women and extremely short. But though small in stature, these women were heavy in weight—too heavy, according to the hospital protocol. The doctor frowned at the number on the chart in front of him.

In response to the patient's claim that she was always hungry, the doctor told her that hunger was a symptom of disease – an effect of a faulty metabolism – and not the disease itself. But he also hesitated as he said this. There was uncertainty in this separation between disease and symptom, since the patient had described hunger as a causal force, indicating that it was a deep craving for food that accompanied her as she added sugar to her coffee or reached for another helping of tortillas. It was as if the hunger of her past had stayed with her, making it so she could never feel at ease. She knew she shouldn't take this extra serving, she said plainly when he asked her. But because of the hunger, she did anyway.

Many of the doctor's patients similarly spoke of living with hunger. He might dismiss this; obesity rates were rising and his patients consistently measured as overweight. But he wondered if there were not partial truths in their claims. The doctor, who regularly attended conferences sponsored by the UN-affiliated Institute of Nutrition of Central America and Panama in Guatemala's capital, was aware of research carried out by scientists working in his community that suggested that cells could be "programmed" for hunger (Ramirez-Zea et al., 2010; Habicht and Martorell, 2010). This science, which fed into burgeoning interest in epigenetic development, was becoming popularized through regional newspaper headlines with announcements such as *"You are what your grandmother ate."* The research suggested that metabolism and appetite may not be one's own, but may unfold in generational time: if your grandmother had starved, your body might inherit traces of her struggle. These results didn't fit well with the WHO guidelines based in calorie counts that the hospital clinic relied on, or the treatment strategies that followed in which weight loss was a matter of individual responsibility and could be achieved simply by eating less. But it echoed his patients' insistence upon the reality of their hunger.

In the markers of identity that the clinic kept track of – age, ethnicity, gender, neighborhood of residence – the doctor did not share much with his patient. Except that when we chatted at the end of long and busy days I learned that he too sometimes felt that the presence of hunger, and the immediacy of need carried with it, trumped knowledge of what one *should* eat. He too saw a conflict between the diagnosis of obesity made on seemingly straight-forward metrics and the descriptions of hunger he heard in his clinic. Sometimes after consultations ended he would acknowledge to those of us still in the room that it might not be so clear after all.

Hunger might linger. Hunger might be real, while also changing the conditions of reality. Hunger might be both, at once symptom and disease, cause and effect.

In the language of the measures, however, hunger was incompatible with the patient's condition. And because he was trained to follow the numbers, even though he felt there was much they missed, the doctor gave the advice: no soda, fewer tortillas. The patients before him had typically traveled some distance and waited several hours to meet with him. To point to the complexities of their hunger or the limitations of the clinic would, in his words, add to their burden. So he followed the protocols, advising his patients: *You weigh too much. You should eat less.*

Case 3. The home

The huipil, which Berta adjusted while waiting for the doctor, was designed to make her look bold. That the fabric bunched at its midsection was no unfortunate accident. It was a technique she had learned from the women around her: if the cloth doubled over when tucked into the skirt, her waist would appear to expand. Much like the skill of shaping tortillas, this was a style she had acquired as a girl, a style meant to distinguish her even as it bound her to her community. This fold of fabric-acting-as-flesh indicated that she was ample, sturdy and strong. She could weather hunger and survive. And not just survive, but find a bit of abundance as well. There, in the fold of the fabric, was evidence that life wasn't all toil.

This technique was all the more important because there had been hunger in her life. Maybe not as much as in the eastern lowlands, where rumors circulated of villages filled with bones. In these villages the corn had dried up, and what little grew in the shadows of the barren husks was shipped away for export leaving nothing but dry dirt in its place. People who were

working plantations to grow food that would feed the world were themselves so famished, their lives so full of lack, that their hair grew white— color itself scared enough to stay away. There were rumors that when babies died, you could see dirt in their stomachs through their thin excuse for skin. Apparently they had eaten this dirt because it filled them with a weight that was better than nothing.

It had not been this severe for Berta, but it had still been bad. Weeks on end with nothing but dry tortillas, the yellow in her mother's eyes growing darker, and then the hollow space of another miscarriage. *It's better this way*, she remembered her mother saying. *We have nothing for this child*. She told me that her father and uncles were always away looking for work— returning home embarrassed, empty handed. Celebrations, where there might have been thick porridges flavored with blood and entrails, were subdued, the laughter as sparse as the tortillas. The cold picked off those who were weak: her grandmother and a cousin among them. One uncle died from a fall at work. Another fell asleep under the protection of a freight truck, and whether he awoke as it rolled over him in the darkness of the early morning no one knew. Though a child at the time, Berta did not need to be told they had been drinking. Food was scarce but drink was everywhere. Berta's hunger contained all this: family relations, employment possibilities, and many matters not directly connected with nutrients to eat.

Much was changed now, though much remained the same. Public health workers, drawing upon research that pointed to the chronic hunger of the region had begun to arrive at her village, bringing with them packages of fortified powder. She felt this was not for her: *nutrition*, a term that was new to her, a term which had no equivalent in Mam, the language she spoke with her kin, was for people who were truly in need. These powders were for people making due on nothing more than tortillas, salt, and chile. She had more than this on her table. She had access to

vegetable oil, even if it was used over and over and only thrown out once it had turned black and rancid. And Pepsi accompanied festivities in her home, its sweet taste a marker of celebration. No, she was not among the truly hungry.

But there was a pause in our conversation. Just moments before she had been telling me about the hunger she lived with through her days—a hunger entailing a drive to eat and a sense of longing that snuck up on her, a hunger that subdued her, to which she was vulnerable. Advice to avoid soda or eat fewer tortillas was no good, not just because she could not say no to the generosity of her kin, but also because this hunger did listen to her efforts. In her silence the term, and this language, seemed to fail her. She told me that advice to eat less made her want to eat more; and though the hunger was getting worse, becoming less controllable with each passing day, her body was not responding by growing thinner. Instead, it was becoming harder to double the *huipil* over as her flesh expanded outward. What she had once held to be boldness was becoming a haunting sign of defeat.

Entanglements and Disentanglements

Whether I am in Guatemalan villages or European institutes for global health, the problem of hunger is mobilizing considerable action around me: scientists organize conferences to examine their methods for measuring what it is; policy makers assemble and disassemble hunger indicators; politicians and health workers (some of whom are one and the same) negotiate conditions and quantities for aid. Those who speak about hunger do so with concern. It is the cause of poor cognitive performance, lack of economic productivity, impairments in reproductive health, pain and worry that brings sleeplessness at night, and the death of kin. Many

of the reports I read and commentary at the expert meetings I attend invoke a sense that there is a singular *object* out there— which carries with it a tangible universality that makes people sick. But my empirical engagements suggest that though it hangs together within the word hunger (in all its various languages), it does not fit within a single definition, instead emerging variously from site to site.

The expert in the bright office had assembled his definition of hunger through three sets of data: one national, one regional, one local. He would run the data through factor and multivariate statistical analysis in an effort to eliminate variation. In doing so, in using confidence intervals to strip away the data's "inconsistencies," he hoped to reveal the relevant underlying dimensions of hunger. With hunger thus transformed into a unit of measure, he could move from the individual to the global, and from the global to the individual as though he were talking about different sized objects that were, at their core, the same.[vi] The resultant knowledge of hunger could be translated smoothly across scales, appearing, as it did so, precise and powerful.

In my own analysis I have also made three slices, illustrating ways in which hunger materializes in each. There is the office, a space of airplanes and indicators; the clinic, with its scales and measurement charts; and the home of a *huipil*-clad woman, with her appetites and pain. I chose these sites because it might seem as though these are three scales, each opening onto the object of hunger: one *global*, one *regional*, and one *local*. Yet the evidence I have deployed does not present a singular hunger at various scales, but various hungers. While there are clear connections in these hungers, these hungers are not equivalent: there is a hunger felt within a body, a hunger determined through a medical evaluation, a hunger of spreadsheets, food aid, and international politics.

A scalar based reading of these cases might take each case as an example of local hunger and, from there, imagine that by amassing enough of these situated perspectives, we could begin to edge toward "global" hunger. The linking together of numerous micros to form a macro is, after all, a longstanding technique of the social sciences (Lepawsky and Mather, 2012; Latour et al., 2012). In my analysis, however, many locals do not add up to the global; instead there remains something expansive and something intimate in each case. The hunger experienced by Berta – a woman with a name, even if anonymized here – was linked tightly to international commodity chains. The clinic's hunger was assembled out of various "health" or "illness" cutoff points recommended by an international institute that drew its data from points of contact in which scientists would carefully measure people's waists. The expert's statistical calculations emerge from particular boardroom decisions. These versions of hunger are distinct—Berta's hunger is not the same as the expert's. But at the same time, there is not a case of "feeling hungry" to be contrasted with a case "calculation"; in all cases, sentiments and calculations co-exist and entangle. Each case – the Maya household, the city hospital, the policy center – is at once global and local, with abstractions and particularities. In these cases there is similarity without replication.

And it is here that I want to draw these cases together with an observation and some suggestions. First the observation: twice a week for nearly 16 months I sat in a nutrition clinic in an underfunded public hospital in the Guatemalan highlands while men and women who had never before been weighed were asked to step on a scale. Whereas stepping on a scale is an entirely familiar process for most in the so-called West, for many in the health clinics where I worked this was still a very strange thing to do. Some laughed at this requirement, finding humor

in the treatment of the body as though it were an object on the market. For others, this was not simply odd but insulting. They did not want to be treated like commodities.

According to the measurements produced by these scales – which were then interpreted by doctors according to policies crafted by UN experts – many of the patients were deemed overweight and then given advice to eat less. I was usually unsettled by this advice, in part because of the absence of convincing evidence that eating less results in better health (Casazza et al., 2013; see also Guthman, 2011), in part because of the disturbing images of thin, white women's bodies used as a marker of fitness in a country with a too-recent history of genocide, and high rates of femicide (Menjívar, 2011). The advice to eat less was also disquieting since even short conversations with patients seeking guidance for obesity were filled with stories of hunger. The precise, transparent truth of the scale offered no space for the many hungers they experienced, for the uncertainties that filled their stories, or for the uncertainties in the doctors' responses, leading to guidelines that were of little use to patients in their everyday lives. The doctors, nutritionists, and even the makers of policies were aware of this, but in the context of diagnoses organized around scales, ambiguity was considered a liability, not a strength.

There are many reasons why the hospital's protocol relied upon scales. The compression of a multitude of ways of relating to food, eating, and bodies into a single metric offered dietary guidelines that appeared quick and broadly applicable—something desirable given the long lines of patients waiting to be seen by an overworked staff. That the region was culturally diverse and the hospital served a public that spoke several languages added to the appeal of a technology focused on numbers and not stories. I also suggest that public health protocols focused upon scales to the extent that they did because the ideals of statistics and experimental science have become superimposed upon the ideals of treatment and care. In epidemiology, uncertainty is

underpinned by a language of probability and risk as something to be minimized and tamed. But uncertainty, as an inevitable part of life and relations, might play a different role when crafting treatment strategies for hunger and dietary health (Whyte, 1997). In the clinic, it might not be something to eliminate, but something to work to live with (cf. Mol, 2008: 93). And in policy meetings too, it might similarly be taken not as weakness but as the foundation for connection and a sometimes necessary, and perhaps even useful, aspect of intervention (cf. Whitmarsh, 2010).

This is a reason that scholars concerned with hunger might want to disentangle policy, statistics, and clinical sciences in order to recognize an array of intervals of confidence. One confidence to work toward may not be grounded in the certainty of facts, but in the willingness to listen to the complexities expressed in people's stories. Unlike fact and certainty, confidence and certainty need not necessarily be tethered. Indeed, ethnographic confidence often lies not in knowing, but in an aptitude for curiosity and a willingness to engage *with* rather than to (re)solve what is unknown. In ethnography the persistence of uncertainty – as it pertains to non-knowledge, to rumors, to secrets, and even to outlining the parameters of fieldwork – may be an incitement, not a hindrance, to participation and engagement (see also McGoey, 2012; High et al., 2012).

Wenzel Geissler writes: "Hunger is difficult for scientists who work in the global health entity of Africa to get a handle on" (2013: 19). Food frequency surveys and dietary recalls are filled with disjunctures between medical and lived categories. Hunger, as he describes it, is something that emerges in moments of interpersonal conversation outside the codified call-and-response space of bureaucratic paperwork. In his work, he finds that statistical knowledge of hunger also requires participation in "off the record" encounters including time spent in home

life and the formation of relations that push beyond the subject-object dyad through which much global health research proceeds.

As my research also shows, the contingent character of hunger should compel us to question the narrow terms through which knowledge is bound into units and organized by models that aspire toward certainty. The knowledge that arises from metric-based comparison of difference across scales rests upon the existence of a common denominator; the arrangement of data through levels and hierarchies of scales aims for organization that produces unequivocal conclusions. This is a practice through which differences and ambiguities appear to become canceled out. But this kind of equivalence may not be necessary when crafting policies and designing interventions. In this context of care, there may be no need to minimize variation, for difference may not be an obstacle to overcome. Rather than forge a common language, it might be more important to learn from roughness of translations and the places where variation refuses to be smoothed away. Hunger is certainly a problem, but it may not be a problem that this hunger takes many forms.

Conclusion

Herod and Wright astutely note that when scales are used to order geographic space, moving between scales is akin to traversing from "a central point outwards to ever larger scales in which the global scale, being the most distant circle, is seen to enclose all other scales and yet be 'farthest' from the location of the observer" (2008: 7). In contrast, a focus on empirical specificity – a woman struggling with changing food supplies, a doctor trying to make WHO recommendations meaningful for patients in his clinic, an expert wondering how to integrate

history into his spreadsheet calculations of hungers – makes evident that "the global" is not far away (see also Adams et al., 2014; Tsuda et al., 2014). It is not (only) something to be figured by technical computer algorithms and interventions that depend on detached, distant observation. It can also be close and familiar—as can the knowledges about it.

In challenging the possibility of objective, neutral measurement that underpins the public health practice of scaling, the cases of hunger I have presented also challenge the idea that there is a world out there waiting to be charted or known with the confidence of certainty. Whereas statistical knowledge depends upon this confidence, the cases of hunger I have highlighted aim to make space for knowledges that are not circumscribed by unit-based parameters. It is in this refusal of the bounded unit that multi-object fieldwork is not a mode of pluralist, constructivist relativism. The object of hunger is not the same from case to case, but neither are these hungers stable units, isolated from one another; they are instead filled with "partial connections" (Strathern, 2004) such that what happens in a policy boardroom affects the advice the clinician gives his patient, which affects the meals she eats, which in turn affects what happens in the clinic and how the policy maker spends his days.

The intervention my research makes into scientific configurations of reality, while on one hand theoretical, has pragmatic aims. As social scientists increasingly intermingle with the spheres of global health and public policy (cf. Crane, 2010; Pfeiffer and Nichter, 2008) we might be inclined to organize our research in terms of scales so as to give clean, unequivocal results. But my research suggests that too many hungers would be silenced in this orientation to knowledge. Scalar calculations enable comparison across difference, but they do not neutrally, nor naturally, report upon the world. Instead, they shape this world in specific, sometimes limiting ways. They can result in a focus on measurements (in Berta's case a quantity of weight

and of consumption) that forecloses attention to the historical and political contexts of her affliction. They can deny hunger to people deemed too heavy to experience true need, resulting in knowledge that due to, not in spite of, its numeracy leaves them with care that is not meaningful. In their aims for accurate representation, they can overlook that certainty may not be the best route to care.

I am not suggesting that the knowledge produced by experience is from the outset more accurate than mathematical calculation, but, rather that accuracy is, to use an apt metaphor (Mackenzie, 1999), an always-shifting target. The scalar imagery running through the field of global health's emphasis on the calculation frames accuracy in the terms of immutable objectivity. I am rather pushing toward an accuracy – and an accompanying response strategy – that attend not to the stable truth of the world, but to the contours of the truths that knowledge practices bring into being. This is an accuracy that is never accurate outside its own contexts and on its own terms. In the case of global hunger, it is an accuracy that insists upon asking: how do hungers come to emerge, to matter, what impacts does this mattering have, and whose bodies are at stake in how these questions are answered?

Much of the global health community wants responses to global hunger in the post-2015 era to be "simple, transparent, measurable, and easy to communicate" (CFS, 2013b). The silicon technologies being crafted to achieve this transparency do not simply aim to respond to hunger's complexity but to mitigate it—to configure diversity into a singular, determinate, unit-based form to be cleanly scaled up or down. A result of this aim is that despite an apparent willingness to acknowledge diverse stakeholders in their debates, there is little space to involve those who speak with other languages. The conditions of the conversation – which must be structured in terms of "concrete, quantitative, time bound goals" (CFS, 2013b) – contribute to the continued

disregard for the ambiguities of their hungers. As a result, the solutions produced by this approach are routinely ineffective, resulting in forms of intervention that patients and publics find unintelligible, if not harmful (see Yates-Doerr, 2014a).

Social scientists concerned with global translations have long argued that difference can be negotiated, but never transcended or subsumed (cf. Scott et al., 1997). Given that hunger, in its myriad forms, looms as a pressing challenge, the global health community might not simply unite a range of stakeholders in meetings to address hunger. They might also work to bring together, without collapsing together through a common language, a range of methods (see also Stengers, 2005; Hinchliffe, 2008). They might engage with not just *the* globe, but with different worlds whose hungers will be both specific and situated while also shaped by the living temporality of metabolism, in which individuals and their ancestors entwine. As the complex entanglements of hunger and obesity make increasingly obvious, experts concerned with hunger might do well to set aside the goal of a common, unequivocal, numerical truth that can be cleanly scaled across space and aim instead to find ways to value the hesitations, ambiguities, variations and complexities that run through people's lives and through their stories. Energy might be put into learning how to coordinate these stories without subordinating them into a single representational scheme. Rather than aim for research that results in neat conclusions, it might be necessary to make room for a science that allows for the instability of translation—that maybe even welcomes the persistence of uncertainty.

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[i] Expertise is fraught and contingent (cf. Carr, 2010) but in referring to experts here and throughout the article I adopt my informants' terminology.

[ii] Some of these meetings, such as the Global Health Metrics and Evaluation meeting in Seattle, Washington, were open to the public; others, such as the International Congress of Nutrition-2 (ICN2) at the Food and Agriculture Organization (FAO) in Rome, were highly restricted. Some of the conferences had no registration fee (eg. the annual LCIRAH conference in London) while the registration fee for many of the meetings, such as the Public Health Nutrition meeting in Gran Canaria, or the 20th International Congress of Nutrition in Granada, Spain, or the Global Food Security meetings in Noodwijkerhoot, the Netherlands, was roughly 500 Euros, greatly limiting the access of those in attendance.

[iii] For more on the idea of socio-material enactments, and how they differ from social constructions, see Law and Mol (2002) Moreira (2006) and Moser (2008).

[iv] The reliance on this number has been heavily criticized for several reasons, not the least of which is that this is reported to be the caloric needs for a "sedentary lifestyle" whereas many hungry people are anything but sedentary (cf. Lappé et al., 2013). For more on the problematics of "macro body counting" see Sparke (2014).

[v] http://scalingupnutrition.org/news/a-new-way-to-connect-the-movement#.U7z_yY2Sxy8 Last accessed July 8, 2014.

[vi] Latour's analysis of scale has inspired my thinking in many ways, but I remain troubled by his insistence that one of the problems with the small scale/large scale model is that it "implies that an element "b" being macro-scale is of a different nature and should be studied thus differently from element "a" which is micro scale" (Latour, 1996: 371). In my research on global hunger, the practice of scaling did precisely the opposite: it flattened away difference, treating macro and micro level interactions as though they were equivalent in quality, simply different in size.