

## Bio-logics of Poverty

In late 2015, a prestigious international nutrition journal published results from a study reporting that babies living in the rural communities surrounding San Juan Ostuncalco had high rates of microcephaly, a condition defined by the WHO as being at least 2.0 standard deviations below median growth-for-age standards for head circumference, also known as “stunting” of the skull (Chomat et al. 2015). The study’s lead author, a White European woman working at a Canadian university, had carried out long-term research on maternal health in the first thousand days. For three years, she and her research team conducted in-depth interviews with pregnant women, collecting cortisol and anthropometric measurements, including those for head circumference. These measurements indicated that the heads of San Juan Ostuncalco’s babies were consistently smaller than they should be according to global guidelines.

Two of her field assistants, both of them Guatemalan women who held university degrees in nutrition, deployed one of global health’s least expensive technologies, wrapping a white measuring tape around the cranium of babies at two separate times: once as newborns and again roughly six months later. The publication reported that of the 155 mothers enrolled in the study, 19 percent had infants in the early postpartum period who were microcephalic, with 15 percent of the infants maintaining the condition six months later (Chomat et al. 2015, 433). In the field of public health, these numbers are so high that they seem unbelievable, but the Guatemalan researchers who took the measurements were well trained, and their results across the period of measurement were consistent.

The public health community largely understands the problem of stunted head size in Guatemalan babies as an outcome of malnutrition: the babies’ mothers were

malnourished; therefore, the babies did not develop as they should. This chapter suggests that the measurements should instead be understood as an outcome of global health experts' renewed interest in child growth standards, itself connected to a long history of scientific racism. Anthropometric measurements of bodies and heads are one of biologists' oldest fascinations, but the inclination to use head size in nutrition policy is also an example of *mal-nutrition*—the misdirected and harmful actions of nutrition science.

This chapter examines the commonsense idea that biology is a site of investment potential to be maximized through improved nutrition. Specifically, I consider how the Window of 1,000 Days agenda presents the body of the pre-pregnant, pregnant, or breastfeeding mother as the critical site for investing in children, biologizing women in relation to their children's size, growth, and potential to earn and learn. I draw attention to the intersections of maternal nutrition, eugenics, and scientific racism to suggest that theories of fetal development advance stratifications of racial capitalism, in which human worth becomes naturalized along biological lines. Defining women's bodies as the environment of early life facilitates state and bureaucratic control over their domestic activities and reproductive practices. The broader argument of this chapter is that mother-centered biological ideas of poverty, or *biologies of poverty*, both produce inequality and hold it in place.

I use the term “bio-logics,” a compound of *bios* (life) and *logos* (rules/structure), to highlight how “biology” is offered as an explanatory logic for the problems of poverty and hunger. Many in public health have come to speak of “biologies of poverty,” an idea that tightly links poverty and biological function: poverty weakens biology, while biological impairment also produces poverty. I write instead of “bio-logics of poverty,” to slow down the assumption that poverty is a result and a cause of an impaired body. I consider this explanation a particular logic of biology that exists among other possible logics of how life can be harmed or flourish. The social science concepts “biopower” and “biopolitics” have given us the language to understand how politics gains its power by turning biology into a site of governance. To speak of bio-logics is to point to how the logics of what constitutes biology are themselves sites of cultural contestation: biology is not only a site where governance happens; what biology is taken to be also emerges out of relations of politics and power.

A common adage in the field of anthropology today is that “race is culturally constructed,” meaning that race does not lie in biology but in social practices, and it is these social practices that give race the meaning and power that it has. This chapter seeks to push this anthropological truism further to speak of the cultural formation of biology. Rather than split culture from biology, as would the argument that race is cultural and therefore *not* biological, the term “bio-logics” insists that there is no biology outside of cultural practice. I describe how logics of biology emerge from particular (historical, political, economic, social, etc.) preoccupations and interests (see also Fausto-Sterling 2005). To argue that race is not biological risks reifying biology as an acultural system: it closes exactly what

should be opened up for inquiry, that is, the question of how, and whose, biology is made to matter.

I shared these thoughts about biology with a Guatemalan friend, who was also a high school science teacher. “I am afraid that is taking things too far,” he objected. Some things are true; some things are false. He searched for a moment, and perhaps hearing the busy traffic surrounding us, he settled on an example: “If I am standing in the middle of the road and a car comes at me and it hits me, I will be hurt. I may die.” He expected me to argue with him, but I nodded in agreement. I then tried to explain that rather than take the event of the accident as a conclusion, we might take it as a place to start our analysis.<sup>1</sup> Some people would have us focus on breaking bones or cardiac arrest. Their concern might be the body that is suffering from impact. But I would also want to know: Was there a pedestrian overpass, or why was traffic moving so fast? How was it that you came to be in the middle of the road? Or, once hit, could you trust the health care system to take care of you? Did the attendants in the emergency room speak your language? Did they deny you necessary care because you did not have insurance or they suspected you could not pay? What other difficult questions should we be asking?

The point I was making to my friend was that the way we understand a problem shapes how we are then able to act. Bio-logical understandings of poverty have become commonplace in recent years, naturalizing the idea that poverty makes bones brittle and cellular tissues weak, producing maternal disadvantage that traps poor babies in damaged bodies, reproducing a cycle of poverty. The concern, both in the conversation with my friend and in this book, is that treating poverty as a problem of biology makes it too easy to ignore how these understandings of both poverty and biology have emerged out of imperial conditions of dispossession, genocide, extractive economics, and Euro-American supremacy (see also Guthman 2011). If we look at how logics of biology unfold in practice, it becomes clear how they are themselves structured by these imperial conditions and, with this, how they might be structured in other ways.

Racism looms over the conversation about bio-logics of poverty, with longstanding racist ideas of biological fitness serving to legitimize claims to political and economic power. In her annual review article, *Interrogating Racism*, the anthropologist Leith Mullings (2005, 667) writes that the consolidation of an exploitable labor market required by global capitalism has created “new forms of racialization.” She is in conversation with the political economist Cedric Robinson (2000, 26), who argues that a key tendency of Euro-American capitalism was “not to homogenize but to differentiate—to exaggerate regional, subcultural, and dialectical differences into ‘racial’ ones.” For Mullings and Robinson, what is widely called “race” does not only point to differences in skin color to offer a common understanding of race, but to a broader technique of weighing and valuing a person’s worth through embodied difference.

Their comments help reframe the resurgent interest in anthropometry in global health as a key mechanism of racial capitalism, in which health experts deploy the



FIGURE 6. A health worker stands behind a scale used to monitor child length in San Juan Ostuncalco. Photo by author, 2017.

authority of science in their measurements of head size and body length to shore up the perceived superiority of White, European, landowning men. The American studies scholar Mark Tseng-Putterman points out, “Capitalism needs to secure captive labor, resources, and markets to survive. Race is a construct which justifies this process, not an inherent status preceding it” (@tsengputterman 2021). This chapter illustrates how bio-logical explanations for growth become used to justify the poverty of Indigenous Guatemalans, the racist preoccupation with the size of bodies and heads upholding the structures of poverty that efforts to make babies taller frequently claim to act against. It examines how the focus on maternal nutrition takes over women’s health, foreclosing concern for reproductive autonomy, midwifery care, or food and land sovereignty. The overall goal of this chapter is to take away power from racist bio-logics of poverty and instead place power in logics of poverty that will better achieve poverty’s end.

#### ANTHROPOMETRICS OF STUNTING

The publication of the San Juan microcephaly study in 2015 coincided with the codification of the UN’s second set of development goals, the Sustainable Development Goals, which ostensibly put concerns of long-term sustainability at the center of global health. Julio Frenk, a Mexican physician, former dean of public health at Harvard University, and one of just a handful of people involved in creating the

Millennium Development Goals at the turn of the twenty-first century, explained in a public lecture in 2013 that no one thought the UN's development agenda would be as successful as it eventually became. The "success" he referred to did not pertain to meeting the goals—most countries' attempts have fallen far short—but to how the goals have changed the funding landscape by successfully merging medicine with economic planning.

Indeed, by the time the Sustainable Development Goals took effect in 2016, they were big business. A Unilever CEO called them a "\$12 trillion business opportunity," leading one report in the *Harvard Business Review* to dub them "a massive global public relations charade" (Kramer et al. 2019). In the years the goals were being designed and debated, commercial and philanthropic institutions fiercely vied for representation, knowing that the allocation of global spending depended on seeing their interests taken into account.

Many scientists have described the field of nutrition to me as historically marginalized in comparison to medicine: undertaught in public health programs and underfunded in research sciences. Yet the launch of the Sustainable Development Goals seemed to solidify a turning point. Alongside the announcement of the goals, the United Nations named the first ten years of the agenda the Decade of Action on Nutrition, meaning that nutrition was to be prioritized across each of the seventeen goals. Whether the goal was "zero hunger" (goal 2), "good health and well-being" (goal 3), "decent work and economic growth" (goal 8), "reduced inequalities" (goal 10), "life below water" (goal 14), or "peace, justice, and strong institutions" (goal 17), the overarching goal of better nutrition was held to be relevant. As the website on the Decade of Action explains, "The achievement of the Sustainable Development Goals will only be met when much greater political focus is devoted to improving nutrition, as nutrition is both an input and an outcome of sustainable development" (UN 2023).

The centrality of nutrition to sustainable development can be explained, in part, by the increased reliance on metric-based approaches to knowledge production in the development goal era. The first of the Millennium Development Goals had been to "end extreme poverty and hunger." The promise of ending hunger was politically powerful, but it presented a scientific challenge: hunger evoked an individual experience of suffering, but to be useful in global assessments and rankings, it needed to be rendered in a form that could be compared across different aggregate groups. "If something is unitless, it is meaningless," an economist at the Gates Foundation–funded Institute of Health Metrics and Evaluation (IHME) told me. She clarified that she was speaking literally. Without a way to measure something, she could not show it to be statistically significant—an achievement necessary for making policy targets and actions. "Feeling is too messy," she added.

"Stunting" is the solution that global health experts settled on for the messiness of feeling when it came to hunger. The definition of stunting as a measurable deviation from global reference standards for growth-for-age appears concrete

and easy to calculate. Later in this chapter I explain that the metric is not, after all, as clear as it purports to be. But in global health circles there has been broad agreement that stunting serves as a good indicator for the experience of consistently being hungry, and today global health experts use stunting synonymously with chronic malnutrition (but see Scheffler et al. 2020 for a critique of this equation). The idea is that much like rings on a tree, bone growth forms a linear record—an archaeology—of living conditions. Being at or above the growth reference standards is a sign of having been well fed through childhood. If one is consistently malnourished as a child, growth will be impaired, forming an irreversible and measurable imprint on biology.

In the background of the rising global interest in stunting is a series of studies from the end of the twentieth century, carried out in a partnership between the World Bank, the WHO, and the IHME, which sought to calculate which illnesses caused the most harm to global development. Published by *The Lancet*, this “Global Burden of Disease Study” drew on data about death and disability from 195 countries to tabulate the toll that various illnesses had on human health. The research claimed to help spotlight serious health disparities whose toll was previously unrecognized. As Frenk explained at his lecture, the global burden of disease study “brought to the forefront a number of problems that don’t kill but which produce a lot of disability and exacerbate global inequality.” Stunting, sometimes called a “silent killer,” was a prime example. Public health experts expressed concern that stunting, while not as immediate or visible as acute starvation, is disastrous for those living through it. The worry of these experts was that entire populations are moderately to severely malnourished, with tragic consequences.

But the Global Burden of Disease project did not simply shine a spotlight on the problem of stunting, as its authors claimed. Instead, it helped *create* stunting in the sense that the study’s data allowed a problem that was not previously actionable to become a focal concern for scientists and policy makers. Of course, the study did not do this on its own, but it was a powerful example of a cluster of studies documenting the far-ranging impacts of malnutrition that allowed experts to unite chronicity and urgency through human biological development. As the WHO’s website explains, “Stunting is the result of chronic or recurrent undernutrition, usually associated with poverty, poor maternal health and nutrition, frequent illness and/or inappropriate feeding and care in early life. Stunting prevents children from reaching their physical and cognitive potential” (WHO 2018).

Axel Van Trotsenburg, a Latin America specialist at the World Bank, explained the problem as follows:

In Guatemala, where poverty affects half of the population, the struggle to eradicate malnutrition is more important and urgent than in any other country in Latin America and the Caribbean, as it exhibits the highest rates in the region: almost one million children under the age of five suffer from chronic malnutrition or stunting. This jeopardizes not just their future, but that of society as well. The reason?

Malnutrition has enormous consequences for the remainder of children's lives, as well as for the countries where they live. (2019)

The WHO reference guidelines for linear growth-for-age typically serve as the standard for calculating stunting. These guidelines, set in 2006 for height and in 2007 for head circumference, come from data taken from 8,440 children in six countries (Brazil, Ghana, India, Norway, Oman, and the US), replacing earlier guidelines drawn only from children in the US (WHO 2007). Scientists recruited the children to participate in growth monitoring because they lived in environments where food was not in short supply and infection rates were low; in addition, their mothers did not smoke, and the children were breastfed in early life. These children helped establish the global norms for growth, not because they were thought to be typical, but because they were thought to be exceptional—an ideal to be achieved.

Answering the question of whether it is appropriate to apply the WHO growth-for-age guidelines for stunting to children everywhere, the WHO (2006, 22) reports, “The standards depict normal early childhood growth under optimal environmental conditions and can be used to assess children everywhere, regardless of ethnicity, socioeconomic status, and type of feeding.” The implications of this brief statement are tremendous. The WHO is claiming that all groups of people have the potential to be the same height and *should* demonstrate the same rates of growth. Deviation from the norm is a sign that something in the environment has manifested in a biological deficiency. The promise that accompanied the statement was that if environments were improved, all populations of people would eventually (after a few generations of biological correction) become the same height.

With the emergence of “stunting” as an indicator of health and illness, entire communities that showed no outward sign of illness had become medicalized and their bodies the targets of health intervention. Or, more accurately, because height is set “irreparably” in early life, entire communities of pre-pregnant, pregnant, and nursing women have become the object of health intervention. According to the bio-logic of stunting, it is the environment—not genetics—that shapes height. But the environment that matters is the maternal environment: a woman's body and the way that her behaviors and beliefs come to shape it.

#### BIO-LOGICS OF MOTHERHOOD

Four years before the UN named zero hunger as the second of its seventeen Sustainable Development Goals, President Pérez Molina launched his Zero Hunger Pact in Guatemala, with the Window of 1,000 Days intervention as the cornerstone of the hunger prevention program. Both agendas sought to measurably decrease stunting in children. Because of how growth in early stages of fetal and child development was intimately associated with maternal nutrition, first Guatemala and then the UN

specified the need to address the nutritional needs of adolescent girls and pregnant and lactating women as particularly important to their antihunger goals. International organizations, industries, and national governments latched onto the prevention of stunting as a way to increase health and boost economies—which meant that they latched onto women’s bodies as the key site for economic growth.

With the eyes of global health experts focused on growth rates, the Guatemalan survey of maternal and child health (INE 2017) was released to great anticipation while I was doing fieldwork in 2016. The survey documented growth rates for children under five years of age across each Guatemalan department, reporting that 47 percent of children under five in Guatemala were stunted (a minor change from the previous survey carried out in 2008–9, which put stunting rates at 50 percent). Majority-Indigenous regions of Guatemala fared the worst, with rates of stunting at 68 percent and 70 percent, respectively, in the departments of Huehuetenango and Totonicapán. Throughout the public health community, Guatemala was held up as an example of a disaster. “The 6th most stunted country in the world!” numerous outlets reported, referencing the World Bank’s global stunting rankings (World Bank 2017).

In 2017, the World Bank granted the incoming Guatemalan president, Jimmy Morales, a \$100 million loan for his newly launched nutrition campaign, *Grow Healthy: Childhood with a Future* (*Crecer Sano: Niñez con Futuro*). *Grow Healthy* was not just a catchy slogan; growth rates were the metric driving the World Bank’s funding, and the World Bank would use growth rates to determine whether Morales’s nutrition campaign was a success. The document advocating for the loan to Guatemala put stunting at the forefront of its goals: “Reducing pervasive chronic malnutrition (stunting) is both one of the critical challenges and one of the key priorities of the Government, given its impact on individual welfare, costs to the society, and negative impact on economic growth” (World Bank 2016).

Height might seem at first glance self-evident; children around the world are familiar with the experience of standing with their backs to a wall and being told a number that becomes a piece of one’s identity. Yet as bone growth has emerged on the recent global health agenda, so have questions about how to assess it: Is torso size what really matters? Or should researchers disaggregate height by measuring the length of the limbs or by calculating a ratio of limb length compared to trunk length (or sitting height length, or metacarpal length, etc.)?<sup>22</sup> Or perhaps it is head circumference that will best represent a child’s fitness in the world, and skull size data is what researchers and clinicians should collect when assessing stunting. Even for a well-trained researcher, head circumference is not straightforward. Scientists measuring heads in Guatemala are themselves unsure of whether the data they collect reflects bone growth or subcutaneous fat or some combination thereof.

Added to the question of what to measure was the question of how and when to collect the measurements. Noel Solomons, a nutrition scientist with whom

I collaborated in Guatemala for several years, was dubious about common techniques for measurement, including the use of balances and scales. Recognizing that Maya people do not generally like people from outside their communities touching their children, he spent years experimenting with the use of photographs or shadows to indirectly calculate children's height (Beintema et al. 2016). In the Netherlands, where my own babies were born, it is widely thought that stretching out the legs of a newborn, who has been curled tightly in a ball for many months, can damage the hips and pelvis. Newborn height data is simply not collected, the preference being to wait until babies have had time to stretch out on their own. Historically, the global health community has focused on the bodies of children under five, for whom normal growth curves are the steepest. Global health experts have recently homed in on the period of the first thousand days as the critical window for gathering measurements. But is there another window within this window, they ask themselves?

Compounding the complexities of how and when to measure growth is the question of what form an intervention to improve growth should take. Researchers are confident that pregnancy and early life marks a critical window in which to intervene, but which supplements and vitamins should be added to the pregnant person's diet (or, in recognition that people eat together, maybe it is the family's diet that should be addressed)? Should prophylactic antibiotics or antiparasitic medication be given in pregnancy to reduce minor infection so that existing nutrients in pregnancy can be absorbed? How about offering cash transfers so that mothers can decide for themselves what their children need?

The push to resolve this uncertainty focused on collecting more measurements and developing more sophisticated data technologies. The Gates Foundation especially has become interested in how to make children taller and has begun to compile various assessments of growth taken throughout history in its databases. At the Universidad del Valle in Guatemala City, data from hundreds of old studies in which researchers had collected height, weight, IQ, age, and other pieces of information is stored in filing cabinets and boxes, almost forgotten. Similar dusty records exist in universities and laboratories worldwide. The Gates Foundation has hired assistants to enter this old data into its repository. A scientist involved with the Gates Foundation's Maternal, Newborn, and Child Health Programs explained this to me in 2017:

The database that the Gates Foundation is creating will be available to anyone. You can get data from China, India, Guatemala, Brazil, Canada—for whatever study you want. It's not just height and weight. It's cognitive test scores, it's intestinal biome studies, it's blood biomarkers. The Gates Foundation is paying consultants from the pharmaceutical industry and other very high-powered mathematical modelers who work for the drug companies to analyze data on growth to find the best medicine to prevent stunting. That's where they'll make their big profits.

The scientist continued, connecting the push to file data to maternal health.

The billionaire members of the foundation are taking all this information, and they're going to come up with specific interventions, like a vaccine. But the "vaccine" might not be injectable. It may be cash at a certain time, an educational program for pregnant women given at a certain time, a cell phone contact at a certain time. Because they're amassing data from thousands and thousands of studies—ultrasounds in Africa, weight for age scores in India, IQ tests in Guatemala—they're going to see when stunting really starts. Since stunting sometimes starts before birth, we're going to see which trimester is critical and which factors are most predictive of stunting even before birth.

The scientist emphasized that all the data that had been collected about people and their life circumstances would be entered into this super database. This database would be used to assess different health risk variables so we would finally know what he called the "true cause" of stunting and the best way to cure it. The project website states, "This will allow our collaborators to learn from all available data rather than gaining incomplete insights from partial datasets" (UN 2015). The scientist explained, "That's the advantage of putting it all together, digitizing it and then applying mathematical and statistical analysis."

Several years later, another scientist familiar with the study reflected that access to the so-called super database has remained highly restricted, inaccessible even to scientists who have contributed data. Optimism about what the calculations might someday achieve also stands in stark contrast to the general failure of existing interventions. Supplemental feeding programs carried out in Guatemala—and elsewhere—have not resulted in significantly improved growth. Several well-funded and long-term studies of lipid and vitamin supplementation in pregnancy and childhood have failed to achieve the expected reduction of stunting in children around the world (Dewey et al 2023; see also Goudet et al. 2019). "We cannot feed children taller," the biological anthropologist Michelle Lampl noted at the 2017 Nestlé Nutrition & Growth Symposium (Lampl 2017).

Yet we can see in the fantasy of the "billionaire members" of global health funding boards what this failure is actually achieving. Guatemalan poverty, which might be thought of as a problem of imperial exploitation, is here transformed into a problem of maternal environments to be solved, first by more data and then by an intervention into mothering such as a cell phone contact with a pregnant woman during a critical trimester to provide her education or an iron pill.

As I show next, the standardization of the human body seen in the global health focus on stunting recapitulates long-standing white supremacist and assimilationist ideas of biological fitness. The primary way to see deficiency is through biology; the primary avenue for its amelioration is to make everyone's body an optimal size; and the primary pathway for optimization is to intervene in maternal biology to improve the biology of future kin. This bio-logic justifies and upholds racist social

orders. It also transforms social problems into bio-logical problems, paving the way for solutions focused on the control of women's anatomy to be given the highest priority (see also Valdez 2021; Ross et al. 2023). When it comes to addressing poverty, questions of broader political transformation are all but set aside.

### EUGENIC BIO-LOGICS

The research on microcephaly, cognitive growth, and stunting in Guatemala is part of a twenty-first-century wave of global health studies tracking children's head circumference, but head circumference measurement has a long American history. Growth curves, pioneered in Europe in the eighteenth century (Cole 2012), made their way to the Americas through the imperial science of natural history, described as "the exact description of everything" by the French statistician Georges-Louis Leclerc, Comte de Buffon (1707–88), who is credited with the first longitudinal study of human growth (cited in Pratt 1992, 34).

Buffon, while a proponent of abolition, is also known for his unabashed racism. He argued that American life was weaker, smaller, and feebler than life in Europe, using growth charts to show how American bodies had degenerated in comparison to European bodies (Dugatkin 2019). The literary theorist Mary Louise Pratt (1992) writes that subsequent natural historians who adopted Buffon's methods, such as Jean-Baptiste Lamarck (1774–1829), thought of themselves as engaged in a project of discovery when they were instead engaged in an ideological project invested in presenting European sciences as authoritative and European people as more advanced than people elsewhere in the world.

Explorers in the Americas further developed an array of racist sciences of body measurement to justify slavery and overt imperialist domination of Latin America's Indigenous people (Stepan 1991; Lindee and Ventura Santos 2012; Few 2015). Phrenology entailed the observation and feel of skulls as a way of assessing a person's psychological attributes; craniometry measured the cranium's volume and was a subset of cephalometry, which calculated the volume of the entire head; physiognomy examined facial features and expressions; biometry was particularly concerned with facial angles.

European scientists used their various body-quantification practices to fabricate distinct typologies of people—they called these races—which they then used to demonstrate European racial superiority. The current tendency to call these measurement practices "pseudosciences" belies the fact that they were esteemed fields of scientific inquiry at the time—and that these older histories of anthropometry have given shape to sciences of body measurement and bone analysis held in high regard today (see also @MCHammer 2021).

"Statistics, as a lens through which scientists investigate real-world questions, has always been smudged by the fingerprints of the people holding the lens," writes the mathematician Aubrey Clayton (2020), who argues that regression

analyses and normal distributions are deeply intertwined with racist eugenics (see also Bogin 2020). Consider that in 1884, the most visited event at the London International Health Exhibit was Francis Galton's Anthropometric Laboratory, which popularized the use of anthropometric and psychometric data to quantify an individual's fitness. Yet what Galton branded as a tool for revealing innate worth can be better understood as a tool for asserting dominance. The progenitor of the idea that "nature" is in a battle with "nurture," he held that intelligence was a trait of nature and that the upper classes were naturally more intelligent than the poor (Galton 1865). Galton (1870) sounded alarms, incorrectly, that poor people had a higher birthrate than rich people, arguing that this would lead to the decline of genius.<sup>3</sup>

"Eugenics" was the term Galton (1883, 24) coined to describe the science of selective reproduction, which aimed to give "the more suitable races or strains of blood a better chance of prevailing speedily over the less suitable." In a chapter in his autobiography titled "Race Improvement," he argued that selective reproduction "is precisely the aim of Eugenics. Its first object is to check the birth-rate of the Unfit, instead of allowing them to come into being, though doomed in large numbers to perish prematurely. The second object is the improvement of the race by furthering the productivity of the Fit by early marriages and healthful rearing of their children" (Galton 1908, 323).

Galton was never able to devise an intelligence test that confirmed his theories of heredity: the poor did as well as the rich on his experiments, challenging his theory that poor people were intellectually inferior. But Galton blamed his test design rather than his theory, and his anthropometric laboratory continued to thrive. He produced an array of scientific instruments to assess mental and physical characteristics—for example, limb or foot length, neck sensitivity, breathing capacity, and head growth—all of which he used to rank people, particularly children, against their peers. "A comparison of the measures made from time to time will show whether the child maintains his former rank, or whether he is gaining on it or losing it," Galton wrote in his essay, "Why Do We Measure Mankind?" (1890, 237).

Galton's eugenic theories found especially fertile ground in the Americas. The sociologist and law professor Dorothy Roberts (1998, 60) notes that at the turn of the twentieth century, wealthy White American men were concerned that non-White immigrants were having more children than their wives. Many promoted the eugenic principle that intelligence and other personality traits were inherited in order to authorize reproductive control over poor, immigrant, and Black women (Roberts 1998, 59–60). The historian Laura Cházaro (2005) points out that American governments have long fixated on how manipulation of Indigenous women's anatomy can be a means of improving society. Drawing from archival work in nineteenth-century Mexico, she shows how theories of European racial superiority caused doctors to assume that Indigenous women had "pathologically

deformed pelvises” that couldn’t successfully birth babies without medical intervention (100). The result was an intricate science of measuring women’s bodies (complete with protractors and scaled rulers inserted into the vagina) that justified ignoring the assistance of midwives and instead send birthing mothers to hospitals to be treated by men.

The field of US anthropology was born out of a related interest in the bio-logics of reproduction.<sup>4</sup> Franz Boas, the so-called father of US anthropology, obtained anthropometric data from 27,000 people around the turn of the twentieth century (Jantz 2003). A German-born Jewish US immigrant, Boas is widely credited for *critiquing* narratives of biological predetermination, such as Galton’s claims that physiological measurements demonstrated the innate, biological superiority of London’s White aristocracy. In the battle of nature versus nurture that Galton had invented, Boas came down firmly on the side of nurture. Boas’s statistical analysis of anthropometric data showed “slight but significant changes in physical traits such as head-form among descendants of immigrants” (Müller-Wille 2020). This finding underpinned anthropology’s critique of racial typology (Boas 1911). Still popular in anthropology today, the critique holds that racial categories are not predetermined by human genetics but change on the basis of location and over time (Goodman et al. 2003; Gravlee 2009). As Boas wrote in 1912, “American born descendants of immigrants differ in type from their foreign-born parents. The changes which occur among various European types are not all in the same direction. They develop in early childhood and persist throughout life. . . . The influence of the American environment makes itself felt with increasing intensity, according to the time elapsed between the arrival of the mother and the birth of the child” (530).

While Boas’s anthropology challenged the inherent superiority of the Anglo bloodline, it nonetheless helped legitimize the idea that meaningful knowledge about human worth lay in the physical measurement of the body—indeed, that anthropometry is a science that follows what Boas (1922) called “biological laws.” “Anthropometric measurements do not, as a rule, follow the laws of chance” (1893, 572), he wrote, authorizing the use of anthropometry as a means of assessing environmental variation. He also highlighted early life conditions as setting the stage for adult biology: “We know that the bulk of the body of an adult depends to a certain extent upon the more or less favorable conditions under which the child grows up. It has been shown that malnutrition or pathological conditions of various kinds may retard growth, and that the retardation may be so considerable that it cannot be made up by continued growth” (1922, 188; *elisions mine*).<sup>5</sup>

US anthropologists working in Guatemala in the mid-twentieth century followed in Boas’s footsteps in their measurement of Maya bodies. Charles Weer Goff, from Yale University, collected anthropometric data from sixty-one Mam-speaking men in Huehuetenango in 1948, comparing the bone structure of living Maya to skeletons unearthed at a sacred site as part of an archaeological project

run by the United Fruit Company. The anthropologist Richard Adams (2010) writes of social anthropologists working at INCAP who produced dozens of scientific papers based on anthropometric data they collected. INCAP's summary report from 1965 notes that the institute's scientists regularly collected seventeen anthropometric measures from people they studied, ultimately using five of these (height, weight, leg length, head circumference, and tricipital skinfold thickness) to determine nutritional status (INCAP 1971). To measure the head, researchers placed a flexible metal tape over the "frontal and occipital protuberances," looking to find the maximum circumference (the guide mentions that women's hair was a problem for this endeavor). To evaluate deviation from the norm, INCAP used reference standards from the United States. The report justifies this decision, saying, "A basic premise is that these standards are a mark toward which the Central American populations should strive as their environment improves and their genetic potential is fully attained" (INCAP 1971, 40).

Anthropologists at INCAP did not explicitly associate race with genetics, but they were nonetheless invested in looking at biological "types" (Boas's word). In their analysis, the environment conditioned biology, but locating difference in biology nonetheless racialized the populations being measured. The bio-logic at play had a clear eugenic underpinning: improving the environment would improve biology and help Central Americans attain their full potential—assessed against US norms. The environment they sought to change was not the racist environment of European supremacy that subordinated Maya people. Instead, the environment they targeted was that of reproduction, which the science of stunting increasingly equated to the environment of the womb.

### CULTURES OF BIOLOGY

In 1965, as INCAP was lauding US biological standards, President Lyndon B. Johnson's labor secretary, Daniel Moynihan, famously released a document meant to support Johnson's recently launched War on Poverty. The Moynihan Report, as it became known, offered "cultural organization" as the reason that Black Americans suffered from poverty. Published on the heels of the passage of the Civil Rights Act, the report is today widely understood as an attempt to undermine political movements for racial justice happening at the time. It focused on kinship structures in the Black community as limiting their potential, not political oppression or racism (Greenbaum 2015).

The report spoke of cultural—not biological—inferiority, but it also focused on Black women's reproduction, offering heredity of culture as an explanation for how poverty is maintained over time. It argued that equality would be out of reach because of the matriarchal structure common among Black Americans, which resulted in welfare dependency among mothers. The report advocated for Black Americans to assimilate into a White, patriarchal culture, noting that "at the center

of the tangle of pathology is the weakness of the family structure” (Moynihan 1965, 30). It also argued that instead of receiving state welfare services, Black communities needed to contribute their labor to US corporations. Only efforts to support employment “can restore the strained bonds of family relationship in a way which promises the continued functioning of that family,” Moynihan wrote (1965, 19).

Moynihan had been influenced by the anthropologist Oscar Lewis’s (1966) “cultures of poverty” thesis, which argued that culture was to blame for poor people’s poverty. Drawing from ethnographic fieldwork in Mexico, Lewis argued that behaviors adopted by poor Mexicans—for example, pathological family structure, social isolation, and behavioral traits (cf. Davis 2012)—created an environment from which poor children could not escape. This thesis has been widely critiqued in anthropology for misrepresenting poverty as an outcome of bad mind-sets. Yet it nonetheless has had pernicious persistence, as policy makers have frequently cited it to uphold the idea that poverty is caused by self-perpetuating moral deficiencies. Following in Boas’s footsteps, Lewis’s framing for poverty was explicitly focused on culture, not genetics. But his emphasis on the intergenerational transmission of poverty from parent to child nonetheless resonates with eugenic ideas of biological heritability.

In the decades following the introduction of the Moynihan Report and Lewis’s cultures of poverty thesis, scientists have worked to shore up the links between poverty and heritability and between biology, culture, and fitness. Echoing Galton’s concern for intelligence and race improvement, INCAP researchers developed and deployed cognitive tests alongside their anthropometric findings. They measured head size, frequently contrasting the circumference of Guatemalan skulls against US national standards. To also assess what researchers called “early intellectual ability,” they gave children quizzes such as “picture vocabulary recognition,” “memory for objects,” “matching familiar figures,” or “block design copying.” Confirming what they suspected—what Galton could not show in his anthropometric laboratory—they found that “poorer children receive lower mental test scores than their peers” (Klein et al. 1977).

At first glance, concern for the correlation between nutrition and stunting may seem to be a departure from Galton’s theories that intellect is predetermined by biology. After all, those who are concerned about stunting argue that poverty is caused by poor environments, not poor genetics. For no fault of their own, children receive bad nutrition in early life, trapping them in disadvantaged bodies forever. Yet this environmentalism was not the radical, antiracist break from Galton’s predetermination that Boas claimed it was. In arguing “nurture” against Galton’s “nature,” Boas nonetheless ceded the terms of debate to a eugenic bio-logic that organized the worth of life through bodily fitness and ranked some kinds of people as more fit than others. The fault may not be children’s, but it was often held to be the mother’s. As the Kahnawake Mohawk anthropologist Audra Simpson (2018) notes, Boas’s seemingly neutral, depoliticized, dispassionate, and

scientific approach to bodies and blood was also predicated on an assimilationist fantasy of the world in which Indigenous people naturally become absorbed into White culture and their political sovereignty simply disappears.

Stunting discourse in Guatemala likewise returns us squarely to the realm of Galton's eugenics by advancing the deeply troubling belief that Indigenous bodies are biologically inferior. The promise—the trick—of the indicator of stunting is that every body has the same potential, but that potential is still measured in relation to White European values of fitness and worth.

### SMALL BUT HEALTHY?

The global health community has coalesced in agreement that growth standards can be “applied to all children everywhere,” but near the end of the twentieth century this was thoroughly contested. In the 1980s, the economist David Seckler (1984) proposed the “Small but Healthy” hypothesis to heated debate. On Seckler's side were biological relativists who argued that it was completely possible to be short and healthy and that the preference for being tall was a colonial value. Short people are not impaired, they held. If anything, their small size is a positive adaptive response to adverse conditions. On the other side were biological universalists who saw being short as harmful. Numerous studies had linked stunting to impaired disease resistance, reproductive challenges, and decreased work capacity and cognitive performance. The argument of the universalists was that stunting was a product of social and environmental inequality, and the very claim of relativism held this inequality in place.

The debate between biological relativists and universalists seemed to be a debate about biological theory, but it was also the case that development aid was at stake in the argument. As Gretel Peltó (1989, 11), a US nutrition scientist (with a PhD in anthropology) who worked for many years in Guatemala, explained, if shortness was not a biological disadvantage, hamstrung food aid budgets could be further reduced: “Humanitarian people can give a sigh of relief that hundreds of millions of people formerly thought to be suffering and in need of help are actually ‘healthy’ after all.” Reynaldo Martorell, a lead scientist in INCAP's Human Capital study, discussed extensively in the next chapter, came down clearly on the side that small stature is *not* healthy. He observed that growth monitoring of children was an excellent tool for identifying health problems and interventions. “To acclaim small body size as a desirable attribute for populations is also to affirm that its causes are desirable,” he wrote in an effort to highlight how dangerous it would be to leave the causes of stunting unchecked (Martorell 1989).

The centuries-old interest in reproduction and fitness hangs over the debate. A key worry among nutrition scientists is that it is not just an individual who is affected by stunting but their progeny as well. Barry Bogin explained this at a 2017 lecture in Guatemala: “The Maya are not short for genetic reasons because when

we measure them in the United States they're much taller, and they get taller in less than one generation" (Bogin 2017).

Bogin is a physical anthropologist from the US with a specialty in human development who has worked in Guatemala for decades. In the mid-1970s, he held a visiting position at the Universidad del Valle, where he studied bone growth rates among rich and poor Guatemala City schoolchildren (Bogin 1978; Bogin and MacVean 1978). In the 1990s, he began measuring the growth of Maya immigrants in Indiantown, Florida, comparing these measurements against height data of Maya people in Central America. Analysis of his height surveys suggests that Maya children who grow up in the US are much taller than Maya children raised in Central America. At the lecture he explained:

They're still not tall—they're still only about 30th percentile. They're still, you know, shorter by one-third compared to European Americans and African Americans. But they're much bigger than in Guatemala and I think it'll take another two or three generations to get up to about the 50th percentile. That's what happened with Mexican Americans, after four generations they're getting up to the 50th percentile.

When I asked him after his lecture why it took many generations, he clarified this in terms of reproductive disadvantage.

If you are a girl growing up malnourished it's not just affecting your height—your skeleton. You also have reduced muscle mass, you have a smaller brain, and you have a smaller reproductive system, and that reproductive system may not work as efficiently, so when you develop a placenta it doesn't work as efficiently. When you grow up, the baby you eventually carry—well, you have less body reserves to turn that muscle into protein for the baby, to turn the fat into energy, to turn the bone into calcium for the baby's own growth, and your uterus and placenta are not working as efficiently. The baby you carry is already disadvantaged, so the baby's reproductive system is therefore affected.

Inheritance, as depicted here, is not coded in the genes but is shaped by other biological attributes of reproductive women, including skeleton, brain, uterus, and placenta. The maternal environment centers on biological reserves, understood as the key to the development of the future. Disadvantages in pregnancy give rise to embodied disadvantages for the developing fetus (frequently called a baby or child), creating a nongenetic but nonetheless biological mechanism for the cycle of malnutrition to persist through generations. USAID's "Guatemala: Nutrition Profile 2017–2022" (2018) explains, "Maternal short stature, which is a determinant of childhood stunting, is also a significant problem; nationally, 25 percent of women are shorter than 145 centimeters, and this prevalence rises to 37 percent among indigenous women."

Stunting seems to rest on environments: bodies, flexible and adaptable, can be shaped by their surroundings. Yet the focus on how inequality is reproduced

across generations—maternal disadvantages passed from mother to baby and beyond—revives Galton’s ghost. Theories of bio-logical development that fix inequality within the maternal environment have the potential to reinforce inequality outside this environment as well.

### THE STIGMA OF STUNTING

Critics of the Small but Healthy hypothesis were adamant that global health experts pay attention to the humanitarian consequences of circulating the idea that small bodies are healthy, an idea that would authorize the defunding of food aid. Following their lead, so must we pay attention to the social consequences of linking poor maternal health with the condition of being small. As the Guatemalan nutrition researcher Rosario García Meza (2020) has argued, metrics have “social lives,” and attending to these should be a crucial part of public health practice.

The epidemiological measure of stunting was designed to compare human growth across populations, not as a diagnostic tool for individual patients. But the clinics in San Juan Ostuncalco have taken this logic up anyway. Height, which is quick and cheap to evaluate, has become a proxy for “health” for clinicians and development workers alike. It can be known with nothing but a measuring tape, or a measuring table in the case of babies. Today individual children are evaluated against global growth standards. If they are two standard deviations below the median size for their age, they are given the diagnosis “stunted.” San Juan women arrive at health clinics with their children’s growth cards carefully folded in the breast pockets of their handwoven huipiles. They present these cards to attending nurses or educators on entering the consultation room, and one of the first things clinicians do is measure the children’s height. They then spend much of the limited time they have with mothers discussing their children’s size.

Head circumference has also become important in clinical evaluations. “Serial measurement of head circumference should be incorporated into routine well-child care,” policy makers advocate, arguing that it is a cheap, quick, and non-invasive means of tracking intellectual delays and common neurological disorders (Harris 2015, 680). When my long, fat, four-year-old who was exploding off the growth charts became feverish on a trip to Guatemala and I took him to a city health clinic, the first thing we did at the consultation was measure his head size. “Standard practice,” the nurse replied, when I asked her why this would be relevant for a fever.

Health workers record anthropometry on the child’s growth chart, and if the line is faltering—which it often is—they give mothers a quick lecture on the need to feed their children better so they grow. Though the clinics serve a predominantly Indigenous population, nurses and educators are rarely Indigenous. Their lectures typically repeat formulaic talking points in the language of Spanish bureaucracy: *Your child is too small—this is not good for him. He needs to eat better. Here is a*

*recipe for pancakes. You can make it with the powdered formula that we're giving you. Just sneak some formula into the mix.*

Mothers were usually quiet in response. They looked at the floor, trying to avoid attention. Because the image of subservient Indigenous women is an ugly stereotype in Guatemala, I hasten to add that the mothers are not generally quiet women. In their homes they are sometimes boisterous and full of laughter and sometimes pensive, busy getting things done. But in the exchanges with care attendants I observed, mothers only very rarely spoke, and when they did, it was to nod in agreement. As I explore in chapter 5, historically, health workers have removed many Maya children from their families under the pretense of unfit parenting, raising the stakes of a seemingly simple health consultation.

I attempted to talk about the public health interest in the head size of infants with numerous midwives, including those who attended home births in the San Juan communities. They were usually willing to speak with me about the topic, though they never had much to say. Even though they had a rich vocabulary of numeracy with which to talk about the dilation of the cervix or the length of time of gestation, it was clear they did not find the subject of infant head circumference important, and they could not tell me about what their patients thought about it.

Mothers themselves had absolutely no interest in conversing with me about head size. I learned early on from María García Maldonado, a Maya-Mam lawyer who frequently accompanied me as a translator when I did home visits with women from the San Juan communities, not to raise the subject of anthropometry. On occasions when I asked Maria if she would broach the question of what mothers thought of growth monitoring instruments—charts, length boards, and head circumference tapes—she would silence my curiosity with an instructive but decisive shake of her head. The message was clear: there was no polite way to discuss anthropometry.

The reason for the silence around the topic had nothing to do with a general discomfort with measurements. After all, the women in San Juan were expert weavers, who could easily handle the minute calculations necessary for intricate tapestries. With many of the men in the community gone in search of employment, they often handled the bulk of their household finances. The problem was not with metrics in general but with what was being measured and how these measurements were collected in a context of long-standing and objectifying fascination with the bodies of Indigenous women and children.

Other researchers in Guatemala, including Solomons, have hypothesized that women may rejoice when their babies are small, their preferences running counter to the public health dogma that a bigger baby is a healthier baby. “The worst way you can die in agony is in obstructed labor,” Solomons argued during a weekly seminar at his center, adding, “It’s better to have a small baby if you’re smaller, despite the consequences to the baby, than to have a big baby if you’re small. Then you lose two people.” He searched for a way to explain that having a big baby—the

goal of much supplemental nutrition—too often resulted in the dangerous dis-synchrony of needing to birth a large head through a small pelvis. His broader point was that instead of focusing on big or small babies, the field of public health should aim for an intergenerational congruence between mother and child.

Yet this narrative, even as it challenges conventional wisdom in public health nutrition, is still bio-logical. It might not be that babies with large heads are inherently a problem for childbirth. Instead the problem of death in childbirth may rather lie in policies that have made midwifery a stigmatized and dangerous occupation, leaving women in Indigenous communities to birth alone. One midwife in San Juan told me proudly that in her twenty years of practice she had never lost a mother, but she also knew her skills were rare. The most recent national census (2014–15) reported that 35 percent of births in Guatemala took place without a skilled birth attendant. This was not an accident. The anthropologists Nicole Berry (2010) and Sheila Cosminsky (2016) show in their work studying the WHO's Safe Motherhood Initiative in Guatemala how this initiative systemically devalued the knowledge of Guatemalan midwives, making communities reliant on medical birth settings and the commercialized health sector—often with harmful effects.

Whereas midwives were not very interested in head size, they were interested in talking about how to improve reproductive autonomy. A Maya-Mam midwife I interviewed in Guatemala City told me that the best health intervention she had undertaken in the course of her practice was to bring fathers into the birthing room. She said that when men saw the pain and intensity of labor firsthand, they would become more likely to let their partners have control over birth spacing and allow them the contraception this entailed. But changes like this, *because* of how they can benefit women's lives and challenge patriarchal norms, are a challenge to institute in policy. Instead we have policies that tend to tell women to eat better.

#### THE PROBLEM OF STIGMA

At a meeting with Gates Foundation researchers in Guatemala City, Dr. Solomons raised his hand to ask what they planned to do about the fact that stunting is a normative word and that carrying out research on stunting risks stigmatizing an entire society. “The problem is not in being small. What made you small is the problem, but that message is hard to parse and deliver,” he clarified.

He nodded toward me: “I think Emily, along with other people here in the room, is very sensitive to stigmatizing, and very conflicted about how to create a public health message around stunting. If you're going to be open about your research results, you should anticipate how they will be interpreted in many ways—for political reasons among others.”

As I explore in the next chapter, Indigenous Guatemalans are often socially marginalized for being short. The anthropologist and physician Gideon Lasco

(2023) has described how racially encoded ideas about the superiority of being tall have reinforced the belief that “height matters,” the title of his recent book. He draws on ethnographic fieldwork in the Philippines, where much as in Guatemala it is easier to secure a job, participate in the military, or advance in sports if one is tall. He illustrates how teenagers, who are conditioned by colonial sciences to see height as desirable, desperately want to be a few inches taller. His research reveals the tragic consequences of what he calls “the science of stature,” including the ingestion of harmful growth enhancement supplements and other attempts at height manipulation among the country’s youth. Maya Guatemalans who are short are likewise denied employment opportunities, limited in schooling opportunities, and called names when moving through urban, non-Indigenous spaces. Many non-Indigenous Guatemalans equated being short with being inferior.

Recognizing the possibilities for stigma, some public health workers reject the term “stunting” as derogatory and harmful (e.g., Cannon 2005). In trying to treat the problem of stunting, they argue, the problem of stigma will cause this so-called treatment pathway to make people’s lives worse. Solomons held out hope that a better understanding of the physiological mechanisms of stunting might “help to protect life and restore health.” But he also thought it would be necessary to “destigmatize the problem” in order to get a handle on it. “Those who have the power to define abnormality have the power to create discrimination,” he warned his audience, making it clear that they would have to play an active role.

Solomons, for one, has recently been a vocal critic of the idea that head size maps onto cognition. As I explore in the next chapter, the correlation between head size, neural density, and intelligence has become a World Bank talking point. In briefings and brochures about the dangers of stunting, experts circulate images of brains that have “stunted” neural networks alongside images of hungry children. Solomons objected to this correlation, teaching his research staff that these images were typically based on bad science, driven by stereotypes and lazy conclusions that would not be upheld in the court of peer review.

When reviewing the materials in this chapter, Solomons lamented how the diagnosis of microcephaly collapsed the dangerous medical condition of having severe neurological damage and the frequently benign condition of having a small head. Heads can be small with absolutely no impact on cognition, he pointed out. Research carried out by scientists from his center also suggests that head circumference is one of the most protected aspects of growth. As a result, high rates of food scarcity in Guatemala may affect stature but have little to no effect on eventual head size—and nothing to do with intelligence (Maldonado et al. 2017; see also Pomeroy et al. 2012).

Since the initial report of microcephaly among babies in San Juan, the scientist running the Maya-Mam study has become skeptical of using stunting as an indicator of human potential. Her team now speculates that babies’ heads might

be smaller than average at birth, not because of slow growth rates, but because of dangerously high rates of premature birth in the region. Perhaps what appeared as an epidemic level of microcephaly would self-correct as children grew older. Accordingly, rather than focus on a baby's length, attention should be directed to the widespread trauma and discrimination that pregnant women in the region experience, which is known to result in early labor and delivery (Chomat et al. 2018).<sup>6</sup> In a conversation a few years after her study was published, she expressed hesitancy about collecting data on head size: "Taken on its own the measurement means so little—yet holds such great potential for negative interpretation and stigma."

Having worked in the San Juan region for more than a decade and having gained a deep understanding of the needs of the communities, she has redirected her energy away from the collection of anthropometrics, instead using participatory methods that lift up women's own stories. During the COVID-19 pandemic, she partnered with a group of women to publish a trilingual book with a therapeutic purpose: it offers women a platform to express themselves to a broad audience while doubling as a pandemic-era fund-raiser (it is available by donation at <https://buenasemilla.gumroad.com/>). An entry from a participant named Julie Lopez includes the carefully drawn image of an eagle, attesting, "I am a hardworking, intelligent and brave woman. I have gone through difficult situations in my life, but I have faced them with courage and I am happy because I have my family with me. I identify myself as an eagle because I fight every day."

Lopez's quote reflects how the stories women offer do not frame their bodies through narratives of lack, deficiency, or personal pathology. They offer their readers a bio-logic—an understanding of how life works—that runs counter to the shaming of mothers for having small children that we saw in the health clinic or the narrative of weakness promoted by global health experts. Instead, the social hardships they have endured have made them strong.

#### CONCLUSION: OTHER HISTORIAS OF POVERTY

Many public health practitioners deploy the metric of stunting to name how poor environments come to shape human biology in uneven and unfair ways. They offer poverty, which manifests in inferior and unhealthy bone formation, as an explanation for why the global health community should pay attention to how children are growing—or not. In this line of reasoning, anthropometric analyses can offer concrete, actionable evidence for how disparities in resources structure children's future possibilities and potentials: the simplicity of stunting's metrics can be leveraged to make people in power pay attention to how poverty takes root in biology that they might not otherwise see and that they might be in a position to act against.

And yet wrapped in these simple-seeming metrics are living histories of phrenology, fitness, and IQ—all of which perpetuate racist, gender-based violence

against Indigenous and poor people in Guatemala in the name of doing good. This chapter has worked to demonstrate how bio-logics of poverty operate as what Dána-Ain Davis (2019, 32) has called an “adjunct of racial science,” proving the existence of racial categories in order to shore up racial hierarchies. I conclude with the suggestion that instead of focusing on impoverished biologies, medical and academic communities should use their power to work against the structures that willfully and knowingly produce poverty—that benefit from it and do not want it to end.

The “small but healthy” hypothesis from the 1980s has been refuted as harmful relativism. Without reviving it, we must also consider that Maya-Mam women suffer less from a short stature than from the discrimination they face—for their size, for their shape, for their bodies, for their active refusal to conform to Guatemalan standards, including language and clothing as well as physiology. Maternal nutrition projects may seem to be designed to improve life conditions and alleviate poverty among Indigenous women. But they are operating within a political and social system that harms women for their successes. Guatemala remains a country where racism is rampant, and many people with political or economic power do not want to see women thrive (Cabnal 2010; Casaús Arzú 1998).

The global health community is currently legitimizing scientific and medical interest in the size of heads—naturalizing correlations between height, head circumference, and cognition (Koshy et al. 2021). This chapter, however, has pushed back against the discriminatory bio-logics of poverty in which a high percentage of babies in mostly poor and Indigenous communities are thought to be born less intelligent and less fit than others. The sociologist Tressie McMillan Cottom (2018, 27) reminds us, “Smart is only a construct of correspondence between one’s abilities, one’s environment, and one’s moment in history. I am smart in the right way, in the right time, on the right end of globalization.”

In the current “narrative healing” project that the maternal health scientist working in San Juan has begun to organize, one of the participants from San Juan, Teresa Ortega, tells her audience, “Hello my sisters, I am going to tell you my story: when I was little I liked to study a lot, when I went to school what I liked most of all was mathematics. . . . My dream was to be a teacher, but when I became an orphan, it was no longer possible.” Likewise, after Claudia Gómez González crossed into the United States, the explanation that her mother offered to the press for her migration focused on the difficulty she had faced cultivating her passions and intellect. She had loved mathematics, but there was no possibility of continuing her studies at home. The shortcomings these Maya-Mam women faced were not in their bodies or brains but in systems of governance that treated them as defective and disposable. As I examine in the chapter that follows, Claudia’s death was an outcome of scientific histories and policy decisions that hurt her community while claiming to care about her intelligence, the food she eats, and her height.

A truth of science is that measurements do not simply report, but shape the worlds they measure. Another truth is that we can intervene in the stories told by measurements by telling other historias. One historia that might be told about poverty in highland Guatemala is that the futures of Indigenous children are foreclosed by a systematic defunding of schools that forces students into classrooms without teachers or supplies even as they are also told that this is the quintessential space for learning and that their own knowledges and forms of education are backward and wrong.

Or we might tell an historia about poverty that focuses on a genocide against Maya people that has actively persecuted and murdered midwives, who are routinely the most outspoken and powerful women in their communities. With their disappearance, we have also lost the knowledge of how to bring babies safely into this earth and to care for their mothers afterward. Global health scientists measuring the size of a woman's pelvis or the size of a baby's health may think they are helping. But the attention focused on anthropometrics serves to distract from the structures of power that want women to be harmed—indeed, that maintain their power by harming women.

In the remaining chapters of the book I turn our attention to these structures, considering how food and nutrition scientists and policy makers have been instrumental in upending claims to land reform, Indigenous sovereignty, women's bodily autonomy, and border reform. The K'iche' anthropologist Irma Alicia Velásquez Nimatuj (2019) reminds us that stories about poverty in Guatemalan communities are also stories of stolen wealth. These stories have everything to do with the violence of colonialism and capitalism, and this violence was historically bolstered—not prevented—by the science of measuring bodies and heads.

This chapter has shown that scientific racism is not only something in history books; the past has not passed, as the saying goes. In fact, the week before Claudia Gómez González was murdered, the investigative journalist Aura Bogado (2018) reported that the US government was keeping alive the science of phrenology. The Department of Homeland Security had been making bone scans to determine the “true” age of immigrant children, using the results as evidence that the children were older than they reported—and as justification for holding them in adult detention centers.

An attorney contesting US Immigration and Customs Enforcement's (ICE's) procedures called this “pseudoscience,” and Bogado cited numerous scientists who pointed out that the bone growth reference norms used by ICE were drawn from ethnically homogeneous populations who did not fit the profile of the immigrants. These scientific objections to ICE's use of phrenology, however, mattered little to the child who “was taken from his foster family in handcuffs” and held in a detention center for nearly six months (Bogado 2018). Here the “biological laws” of growth and development that Boas once referenced were established by the fraught political negotiations of the US legal system—not by the so-called nature of biology.

The focus that the public health community places on the damage that stunting will have on the future allows the harmful bio-logics of the past to live on in the present. These bio-logics may promise to be a key to ending poverty, but they often further discrimination, materializing exactly those outcomes they claim to work against. To acknowledge and attend to these bio-logics is to work against the racism in biology that is still with us today.