

Proxy

THE ECONOMIZATION OF FUTURE LIFE

In 1969, teams of scientists affiliated with the Guatemala City-based Institute of Nutrition of Central America and Panama arrived in four small communities in the eastern part of Guatemala. The scientists were there to initiate a randomized feeding trial, today celebrated as the longest running cohort study carried out from birth in a developing country (Ramírez-Zea and Mazariegos 2020). They had surveyed three hundred communities before deciding on Espíritu Santo and Aldea San Juan,¹ with roughly 500 inhabitants each, and Santo Domingo and Conacaste, with roughly 900 inhabitants each. The four communities were small enough and dense enough that their residents could be easily surveyed and tracked (Maluccio et al. 2005). The scientists had chosen Spanish-speaking communities, in large part because it was rare for INCAP's scientists to speak Indigenous languages. The communities were categorized as rural, but they were located in a department adjacent to Guatemala City so researchers could travel there with relative ease.

The scientists set up a centralized feeding station in each community, operating it in the midmorning and again at midafternoon. The proverbial flip of a coin determined that residents of Conacaste and Aldea San Juan received atole, a protein-rich supplement prepared with sugar and skim milk, designed to mimic a traditional and popular corn-based drink. Residents of Espíritu Santo and Santo Domingo received fresco, a sugary fruit-flavored drink with added vitamins and minerals. For nearly a decade, the scientists would pre-pour these beverages twice a day (Stein et al. 2008). The scientists would refill people's cups as often as desired, taking care to record the exact amount of supplement consumed or discarded. They fed everyone

who showed up, but they focused on pregnant and nursing women and children under seven, and only monitored what this segment of the community drank.

Fifty years later, scientists continued to monitor the babies from the study, who were forty-two to fifty-seven years old when I carried out my fieldwork from 2015 to 2017. A founding principle of the research was that the comparison between atole and fresco feeding stations—which soon became equated in their publications with good or poor nutrition—would provide actionable knowledge that could be used to better people's lives. As one retrospective explained:

The rigor with which the INCAP study was implemented has generated strong and consistent evidence to support the need to invest in nutrition, health, and child care during the first 1000 days of life (from conception to 2 years) to achieve better childhood development, well-being, and human capital later in life. In addition, we are sure that there will be more follow-ups in the future, which will continue to provide invaluable knowledge to understand, prevent, and treat most prevalent nutritional problems globally and their consequences on health, and even for the resolution of emerging nutritional problems. (Ramírez-Zea and Mazariegos 2020, S5)

A US-born researcher involved in the early days of the study told me that the researchers knew what they would find before beginning their research. Veterinarian science had long shown that feeding enhances mammalian growth. In the decades leading up to the feeding trial, the nutrition community had become concerned with how protein deficiency in children led to an illness called Kwashiorkor, described by the WHO in the 1950s as “the most serious and widespread nutritional disorder known to medical and nutritional science” (cited in McLaren 1974, 93). The scientists expected that the children of the pregnant and nursing women who consumed the protein supplement would, much like livestock, grow bigger and stronger relative to the children who drank fresco.

Patrice Engle, a developmental psychologist who worked for INCAP for many years, explained to me in 2009 that the study's origin lay in the progressive optimism that followed the launch of President Johnson's War on Poverty. In Johnson's (1964) words, the War on Poverty sought “not only to relieve the symptom of poverty, but to cure it and, above all, to prevent it.” While the War on Poverty has since been critiqued for its racist foundations (see chapter 2), Engle drew attention to the successful expansion of progressive programs during the Johnson administration. “Remember that this was the time when Head Start was founded,” Engle reminded me.

Indeed, the Civil Rights Act had just become law, and movements were under way across the US to support children and their families through low-cost child-care. Head Start's stated mission was to break the “cycle of poverty” by offering comprehensive programs to address children's varied and diverse emotional, social, health, nutritional, and psychological needs (HHS 2018). By carrying out the feeding trial, the scientists hoped to provide evidence to bolster funding for

programs such as Head Start that supported low-income school meal programs and childhood education programs more broadly. The potential of this knowledge to benefit children was ostensibly why the US government's newly established National Institute of Child Health and Development had funded the study.

After 1977, when the feeding stations were removed, scientists analyzed the impact the study had on the bodies of roughly twenty-five hundred children, finding that those fed the atole drink grew taller than those drinking fresco, with the largest gains seen among the youngest participants (Ramírez-Zea et al. 2010). Specifically, babies from the protein villages who were in utero or under one year of age when they began to receive the supplement grew the longest relative to their fresco-village counterparts. Those who began the protein supplement between one and two years of age grew about half as much as the younger cohort. And those who began the protein supplement between two and three years of age saw even less of a relative change in growth. Scientists reported no impact in height differentials between the protein and fresco communities if they offered twice-daily supplemental nutrition after three years of age (Schroeder et al. 1995).

Today it seems self-evident that eating well in pregnancy helps produce children who are healthy, wealthy, and wise. Yet this idea is neither universal nor innocent. The historian M. Murphy (2017) points to how state planners turned biology into an economic project in the twentieth century—a trend Murphy refers to as “the economization of life.” The Guatemala feeding station research both exemplifies and extends what Murphy describes as an “explosion of techniques for experimental governance” that sought to control reproduction for the sake of economic prosperity (9). As epidemiologists and biostatisticians transformed pregnancy into calculations of potential human capital to be increased or diminished, we see not only the economization of life but the economization of *future life*.

The photos of researchers measuring children's heads that still hang in INCAP's halls fifty years on speak to an enduring principle of the study: anthropometric growth can serve as an indicator of human fitness and economic potential. The prevailing common sense that was both absorbed into and furthered by the feeding experiment was that eating better will create taller, smarter children—and, with this, a better world. Data scientists have worked hard to naturalize the idea that pregnant bodies can be measured and optimized for eventual financial gain. But by following the feeding trial's history—unpacking the swaps and substitutions in scientific practice that helped this knowledge become taken as truth—we can see something else. We can see a situation in which scientists are producing the registers of economic value that they purport to merely describe.

Proxy, as it is used in the English language, implies both proximity and substitution. The word holds within it manifold practices of representation, from political representation (giving voice) to scientific representation (giving truth). In proxy politics, if you cannot vote yourself you can send a replacement (the vote still counts). In computational science, a proxy server allows for re-presentation to happen—data



FIGURE 7. A photograph featuring a young girl having her head measured hangs on a wall at INCAP. Photo by author, 2016.

is made present again—with the effect of directing the flow of knowledge one way or another. In experimental science, if you cannot measure a thing directly you can measure something taken to be representative of that thing. The use of proxies is standard practice in science, but the proxy is also a trickster: it connotes both an act of representation and an authority to represent. It is a thing that stands in for something it is not but in doing so becomes it. In other words, proxies allow for a legitimate doubling of reality: a proxy is, and isn't, the thing that it is proxy for.

Proxies are also central to the exploitation of workers that happens in capitalist economies. In *Capital Volume 1* (1992), Marx argued that the production of capital required the invention of a scale of equivalence that facilitates the comparison of unlike things. The entire system of capitalism rested on proxy substitutions in which objects with different values are treated as if they are the same. In one of the book's most famous scenes he takes readers into the factory, past signs that warn "no admittance except on business," into the realm of the money owner (280). Here he reveals the secret of capital: laborers are paid less for their work than it is worth. It is this sleight of hand that allows the capitalist to accrue a profit. What appears as an equivalence of labor for wages—what sets the system of capitalism in motion—is a lie and a theft.

In capitalist economies, money does the work of hiding the history of the labor, allowing consumers to purchase goods from capitalists in what seems to be an even trade. Yet Marx is clear that this history has not disappeared. The false equivalence remains congealed in commodity goods, which exacerbate inequality by creating a class of capitalists who control the means of production and a class of laborers who are exploited for profit.² The monetary exchange between consumer and capitalist is not a fair exchange, but it seems to be fair because of how money presents an equivalence—a proxy—that conceals the exploitation. It is this appearance of justice as exploitation is happening that keeps the system of capitalism running.

Marx offers his readers a method for understanding the power of capitalism: trace the histories of production in commodity objects to expose the theft of labor in capitalist exchange. If exploitation is enabled by those locked, no-admittance-except-on-business doors it can be challenged by throwing open these doors to make histories of production knowable and then acting on this knowledge. What Marx suggests we do for commodity production we can do for knowledge production as well: we can trace the pathways of scientific practice to reveal how value-laden, interested actions become stabilized as “scientific truth” and then illustrate the effects that this stabilization has on the world. The method Marx offers for the study of capital is to focus on the sleight of hand that happens in commodity exchange to show how two apparently equal objects are, in fact, different. This is a method that can also be applied to the study of science: How and when are variables swapped in and out for one another? What happens as a result of these swaps?

In the case of maternal health research, the seemingly small swaps of scientific practice become a potent site for understanding how specific cultural values become a part of science, all the while claiming to be value-neutral. As I show in this book, the equation between eating good food and intellectual potential has powerful benefits for the political and economic interests of an elite, American, ruling class. Slowing down these substitutions can offer insight into who and what is replaced, erased, or hidden. Because power congeals at the site of the proxy, studying proxies can help illuminate both how power reproduces itself and how this reproduction can be challenged and transformed.

A reason that I apply Marx’s method of studying capital to my analysis of the feeding trial is that INCAP scientists were themselves mobilizing the term “capital” in their work. They argued that the knowledge gained from the study would help produce and enhance what they call “human capital.” To describe this, they reference Adam Smith’s (1909) observations that man, “in the same light as a machine,” works better when he is well fed and in good health. Smith, an eighteenth-century political economist widely held as the father of economics, described human capital as “embodied monetary value.” Along with useful machines, profitable buildings, and improvements to the land, strengthening human capital would be a way of increasing wealth. For Smith, human capital consisted of a person’s talents and skills that improved their productive capacity (389–90). Though it



FIGURE 8. A woman is softening maize to make into a thick atole porridge that she will serve to her family. Photo by author, 2015.

required financial investment, these talents and skills ultimately result in a profit. The INCAP scientists working on the feeding trial noted that Smith would not be surprised by the “strong evidence of a positive relationship between maternal nutrition and the future wages and productivity of children” (Martorell et al. 2005, S6). It was not only veterinarians who knew that the INCAP study would yield more productive bodies; free market economists also would have predicted that early life nutrition would help *capitalize* on future outcomes.

Except that the foundation of the four-village study has since crumbled.

INCAP’s scientists had held that because Guatemalan women and children were generally deficient in protein, feeding them protein would improve their lives. Over and over in their analysis and reports they swap “atole”—the name they used for their high-protein supplement—for “better nutrition.” Yet the idea of widespread, fundamental protein malnutrition on which all subsequent findings have rested was false. It is now widely agreed that Guatemalans were, by and large, never deficient in protein and that Kwashiorkor was rare in Guatemala. In the years since INCAP launched its study, the nutrition science community has reached near-consensus that protein deficiency was an overblown problem (Waterlow 1972; Carpenter 1994; but see Semba 2016).

Proxies move the conversation about malnutrition from a warm, filling atole made from Guatemalan maize that is at the foundation of community sociality to protein to better nutrition to healthier pregnancies to bigger children to more

intelligent and more productive people. In these proxy movements it can become easy to lose sight of all that is covered up and all that is lost. Yet by looking at the act of making one variable a proxy for another, a different aspect of the study becomes visible: malnutrition was not only discovered and treated, but fabricated and imposed.

FROM ORIENTALISM TO FUTURE PROFITS

Scientists working in the 1960s named the feeding trial the “Oriente Study” because it was carried out in Guatemala’s east, where it is flat and hot and plantation labor was (and still is) common. The social theorist Edward Said (1979) wasn’t writing about Guatemala when he developed his theory of Orientalism, describing how Euro-American sciences essentialized “the East” by depicting people from this geographic region as static and undeveloped. Still, I can’t help but think of his work when the feeding trial researchers speak of their early expeditions in which vans full of North American experts—nearly all of whom were men—arrived to monitor and measure the bodies of women and their children based on what was “already known” from research on animals.

In their reports, INCAP scientists describe poor Guatemalan communities as “persisting almost unchanged” for hundreds of years (Solien de González and Béhar 1966). They routinely characterize women and children from these communities as suffering from a widespread and debilitating deficiency in protein that slows their physical and cognitive growth. In 1965, Nevin Scrimshaw and Moisés Béhar, the first and second directors of INCAP, published an article in the *New England Journal of Medicine* identifying protein-calorie malnutrition in Guatemala as a widespread public health problem. They wrote, “It contributes to high mortality in areas where it is prevalent and is responsible for adverse effects upon the health and general well-being for a large sector of the population” (Scrimshaw and Béhar 1965, 138).

In 1967, Scrimshaw again emphasized how malnutrition stunted growth in “underdeveloped” countries. In an article for the *American Journal of Clinical Nutrition*, he wrote:

For the great majority of children in the technically underdeveloped countries of the world, retardation in physical growth and development due to malnutrition and its interaction with infection is a fact of existence.³ This is visible in the almost universally smaller body size of underprivileged populations, regardless of their genetic background. Early malnutrition which stunts growth has also clearly and repeatedly been shown in experimental animals to reduce subsequent learning ability, memory, and behavior. To the extent that this is true for young children as well, the generations on whom social and economic progress will depend in the remainder of this century are being maimed now in body frame, in nervous system, and in mind.” (1967, 493)

In the next paragraph he emphasized the importance of the early life period for development: “In the rat, 80% of the brain growth occurs by 4 weeks of age and in the pig by 8–10 weeks of age” (493). Making an implicit plea for the INCAP study that would begin less than two years later, Scrimshaw concludes his article: “The future of the developing countries depends upon improving the knowledge and technological competence of their peoples. Investment in other aspects of development, including schools and teachers, will be reduced in value if the generations of the future are being damaged now in mind and body. The data already at hand suggests that this is occurring” (500).

In the previous chapter we saw how racialized bio-logics of human development have shaped maternal health policy in Guatemala. In this chapter we can see the Guatemalan history of these bio-logics, as well as how these ideas of the body and its reproduction are founded on slippery proxy substitutions. Guatemalans were Othered, in Said’s terms, by being presented as exotic, frozen in time, and almost entirely malnourished. But, perhaps counterintuitively, they were also Othered because of how they were treated as models onto which scientists could map and decipher general principles of mammalian growth and development, as seen in the slippage between their bodies and those of rats and pigs. They were different *and* they were also universal. Specific women—poor Guatemalan women—were asked to stand in as a proxy for a generic reproductive woman. Charting a participant’s physiological development during and after the feeding trial was intended to have policy implications for pregnancy and nursing far beyond Guatemala.

Nutrition and psychology were both young fields when the trial was being designed. They had not yet calcified as separate domains of science, and from its beginning, the study connected nutrition and psychology by establishing the epidemiological relation between eating and intelligence.⁴ A decade after the feeding stations were removed, INCAP scientists tracked down roughly fifteen hundred children who had been fed from their feeding stations in infancy. They ran the children through a series of nonverbal intelligence tests known as Raven Progressive Matrices. They selected the Raven tests because they relied not on speech but on the assessment of visual patterns, which became more complex over the duration of the test. One research team wrote that the Raven tests were used because they measured “educative ability,” citing the capacity to see patterns and relations in complex and confusing data as indicative of natural fitness for schooling (Maluccio et al. 2006). When analyzing the results of the Raven tests years after the supplemental feeding had ended, scientists found that once-negligible cognitive differences between the trial communities had widened, with the protein babies having a higher adult IQ.

In this new phase of follow-up research they evaluated physical growth and body composition, maturation, work capacity, intellectual performance, and school achievement. The hypothesis of the original setup in the 1960s had been that “malnutrition has adverse effects on mental and physical development” (Martorell and Rivera 1992, 1). Roughly two decades later, the hypothesis became

“nutritional improvements in the critical period of gestation and the first three years of life ultimately produce adolescents with a greater potential for leading healthy, productive lives,” or, as they shortened this, that “improved nutrition in early childhood leads to enhanced human capital formation” (1). Because many of the participants in the follow-up research were still children and not yet employed, the scientists focused on earning *potential*, assessed using data on physical growth and body composition, information processing, intelligence, reading, numeracy and general knowledge, and educational achievement.

In the late 1990s, scientists again measured income and years of schooling among the feeding trial participants to bolster the claim that more protein in the diet leads to improved work capacity and school achievement. They collected data from participants again between 2002 and 2004, when INCAP researchers formally collaborated with Emory University, the University of Pennsylvania, and the International Food Policy Research Institute. This team homed in on economic productivity among 1,560 of the original 2,392 participants to show that not only were men from the protein communities taller and with higher IQ test scores, but they were also earning \$914, or 33 percent, more each year compared to their fresco peers. A lead researcher recounted in a public lecture about INCAP in 2019 that they “didn’t find an impact on economic activity in women because these were very traditional societies and women were homemakers, with very little participation in the labor market. We think they had capacity, but their culture didn’t allow it,” he explained.

It was at this time that the Oriente Study was formally renamed the Longitudinal Study of Human Capital.

PROFIT AND HUMAN CAPITAL

I have attended international conferences all over the world—London, Argentina, New York City, the Canary Islands, and Rome—where policy makers have pointed to Guatemala’s Human Capital study as offering proof that feeding mothers better makes for bigger, smarter, and healthier babies and future adults.

One place I encountered this narrative was at the International Conference on Nutrition and Growth, held in Amsterdam in 2016. Somewhere at the midpoint of the conference, I found myself in the audience of an industry-sponsored satellite talk, which was given prime time in the program and housed in a large banquet room packed with hundreds of academics and industry professionals. It was funded by Abbott Nutrition. The keynote speaker was a professor of pediatrics at a prestigious US-based university who had also worked as a laboratory scientist for Abbott. He began his hour-long presentation with a discussion of INCAP’s study.

In the villages given the protein/calorie supplement relative to those who got the Gatorade-like hydration supplement: it cut infant mortality by two-thirds, it cut stunting in half. They changed the body composition of children as they got into adolescence and adulthood. They were able to change the body composition of the

pregnant female. What we know now—what they didn't know then—is the epigenetic implications of that for the future of the child.

This opening framing places tremendous capacity in the actions of scientists and their miraculous treatments. Meanwhile, the people who were studied became transformed into “body composition,” their lives dropping from view. The professor continued by emphasizing the lifetime of economic benefits to be gained from the scientists' supplements.

What was striking to me—and a reason why I got so intrigued about this—was the intellectual capacity of those children was changed for life as a result of early nutrition relative to their peers in the other two villages. They had much better front brain executive function. They did better on tests. This supplement was a social equalizer. When they compare the kids from the two villages who were nutritionally supplemented early in life with other kids in Guatemala who were wealthy and well educated they saw parity from them on their test scores.

That's a lifetime change that came from nutrition. It's a very important change. There is something unique, obviously, about early childhood, particularly from conception—all the way until ages 2 or 3—as the child is growing fast and expanding their brain.

The professor went on to address the risk factors of poor nutrition during this critical window, listing obesity, hypolipidemia, and cardiovascular diseases but also, and in his words most importantly, lost cognitive capacity. Over the next hour he explained that poor nutrition causes people to not achieve their “full genetic potential,” leading to “serious problems with cognition and academic success.” “You have no idea how expensive poor nutrition actually is,” he told his audience, before proceeding to describe children's supplements that would help redress this deficiency.

It was at this point that his slides switched from depicting Maya children to featuring White children sitting behind desks in school—another proxy substitution. As I looked at the images of smiling White children in school classrooms with clean desks, full bookshelves, and colorful art on the walls, it became clear to me that he was promoting these supplements to a privileged audience. The professor's talk used research carried out on Maya children to make statements about White children's future prospects. The statement, “You have no idea how expensive poor nutrition actually is,” was both a warning to elite audiences about how malnutrition could affect their children and a sales pitch for supplements. The clear subtext of the talk was that the thousand-day window was a window of opportunity for financial gain for the field of nutrition science.

Not all references to the Human Capital study are so straightforwardly predicated on the reproduction of corporate profit. A second example of how Guatemala's Human Capital study has shaped the terrain of global health comes from Jim Yong Kim's work with the World Bank. Yong Kim is a medical anthropologist and physician who served as head of the World Bank from 2012 to 2019. In the years

before he left that position, he helped build the massive Human Capital Project, traveling around the world to encourage governmental officials to promote the importance of early life nutrition.

In his presentations, he routinely moved between the stunting of physiology and the stunting of economies, making fetal development coterminous with global development. At the Gates Foundation Institute for Health Metrics and Evaluation in Seattle in 2017, I watched Yong Kim present images of shrinking cerebral synapses in children's brains to his audience of economists. One slide titled, "The First 1,000 Days: Lay a Lifelong Foundation," showed two black-and-white X-ray images of skulls, superimposed with clumsily drawn depictions of yellow neurons. The brain on the left, labeled "Child with Stunted Brain Development," showed a small amount of limp neurons located only at the very center of the image. The brain on the right, labeled "Healthy, Cared for Child" showed yellow neurons throughout the entire skull. Yong Kim explained that small children have less brain mass and fewer neuronal connections, with the impact being that "they will not learn as well, they will not earn as well" (Yong Kim 2017). He continued:

I think that just like HIV treatment 17 years ago, the catastrophe of childhood stunting is a stain on all of our consciousness. In so many countries in the world the heads of state wax poetic about health and education. But if you look at the GDP, this remains incredibly low. Investing in health and education is not something that has been forced. We're trying to get the data to create political pressure that will force [governments] to do this. (2017)

The Human Capital Index was one of the primary tools that the World Bank developed to create this political pressure. In this index, each country receives a ranking measuring "the amount of human capital that a child born today can expect to attain by age 18." A cartoon video narrates this as follows:

Meet Anna. She was born just this morning. Anna's parents are thinking about her future: Will she survive as an infant? How will she do in school? Will she grow up in an environment that supports health and learning? These questions will shape the lives of Anna, her generation, her country, and our world so it's not too early to start asking. (World Bank 2018)

In the cartoon, a single baby becomes surrounded by dozens of babies, all superimposed on the earth. The video explains that the Human Capital Index uses data about child survival, school enrollment, quality of learning, healthy growth, and adult survival from Anna's country to calculate "how much her generation may fall short of achieving their full potential." In the final cartoon image, the babies have all grown into adults. The video concludes:

For each country the Human Capital Index tells us a story, a story about what the future of Anna's generation *will* be compared to what it *could* be. For example,

let's say Anna's country has an index value of 0.7. This means as they grow up, the productivity of her generation in the workforce will be 70 percent of what it could be if they had benefited from complete education and good health. It is saying something more than just education and health are important. It is saying that business as usual is costing Anna's country 30 percent of its income in the long run. Nurturing Anna's human capital and that of all children will fuel the prosperity of their generation and of the global economy. That is why building Human Capital is a project for the world.

When the project was launched in 2018, Guatemala's human capital ranking placed it 109th of 157 countries. The accompanying document states that a child born in Guatemala will be "46% as productive when she grows up as she could be if she enjoyed complete education and full health" (Human Capital Project 2020). It reports that three in every hundred children do not survive to the age of five, and only 84 percent of children who survive to see their fifteenth birthday make it to sixty. After taking account of what children "actually learn," the expected years of schooling for a child who starts school is a mere 6.3 years. Especially frightening was the message that "47% of children are stunted, and so at risk of cognitive and physical limitations that can last a lifetime."

Yong Kim's emphasis on collecting data that can help advance political will resonates with the message of the Oriente four-village study scientists, who spoke of doing science to improve learning outcomes among the poor. Though Yong Kim's early anthropological writings were once critical of the World Bank, his support for its Human Capital Project arguably reflects a "pragmatic play at reorienting the finance sector's incentives towards investments in pro-poor programs" (Shaffer 2018; see also Erikson 2019). As Yong Kim (2017) explained, "For the first time our agenda includes investing in human capital along with produced capital (machinery and building), natural capital (energy, forest, agricultural lands and other natural resources) and net foreign assets."

The promise, as with the promise of INCAP's Human Capital study, is built on proxies: investing in pregnancy is an investment in economic growth, an investment in development, an investment in a better future world. Yet hiding within the cartoon images of human capital are real people who are being pushed into a life that is valued according to its capacity for capital accumulation. A development project that seems to be pro-poor is still based on maximizing human economic potential—a thinly veiled way of leaving human *exploitation* unchecked.

THE LONG LIFE OF THE FEEDING TRIAL

Guatemala's Human Capital study, born from the claim that early life nutrition can prevent poverty from reproducing itself, has come to affect everything from the protein supplements and multivitamins now regularly found in US kitchen cabinets to the development agendas of global health think-tanks and organizations. It has also circled back to shape daily life in Guatemala.

This is not only because global health experts continue to cite research publications from the original study. It is also because the babies served atole and fresco at the feeding stations continue to serve as biological repositories of knowledge, with scientists using their measurements and biological samples to make scientific discoveries and policy recommendations. Researchers are able to mine the data as it fits with their particular interests and international funding agendas. The interest in IQ in the 1980s gave way to an interest in human capital in the 1990s, followed by obesity and cardiovascular health in the first decade of the 2000s. Today researchers have begun to inquire into the emotional correlates of good nutrition, suggesting that more protein in infancy may contribute to improved long-term mental health and executive functioning—a set of cognitive control processes associated with decision making that includes inhibitory control, working memory, and cognitive flexibility (Wray et al. 2020; Ramírez-Luzuriaga, Ochaeta, et al. 2021). As one recent publication stemming from the original Oriente research summarized this, “Improved child nutrition is positively associated with adult psychological well-being” (Ramírez-Luzuriaga, DiGirolamo et al. 2021).

At its inception there was no ethical review of the trial. One scientist involved told me, “There was no concern about ethics at the time. I don’t recall any serious discussion about ethics within the group or outside the group involved in the study.” The scientist explained that in the 1960s, when the trial was being planned, protocols for research ethics were simply not on the radar of scientists. It was only later, especially following the scandals associated with unethical syphilis research conducted at Tuskegee, that institutional protocols for work with “human subjects” emerged.

In 2016, I attended an INCAP workshop on ethics and vulnerable populations for which guest speakers were flown in from across Latin America. The topics of their talks ranged from the Nazi experimentation on Holocaust victims that resulted in the Nuremberg Code to an overview of the 1979 Belmont report that detailed principles of voluntary consent to civil violations seen in the Tuskegee syphilis experiments in the US. The workshop was sponsored, in part, through a partnership with Johns Hopkins University, which at the time was involved in a massive ethics scandal of its own. The year before, a \$1 billion lawsuit was filed against Johns Hopkins accusing its faculty members of surreptitiously infecting roughly thirteen hundred Guatemalans with syphilis, gonorrhea, and chancroid in the 1940s (Stempel 2019; Rodríguez and García 2013; see also Reverby 2011). (The lawsuit was dismissed in favor of Johns Hopkins in 2022.)

The Guatemalan government had declared the experiments a “crime against humanity,” but over the two days of the workshop, no reference was made to this scandal. Nor did anyone address the fact that Vice President Roxana Baldetti, who had been a vocal proponent of supplemental nutrition in Guatemala and a celebrated speaker at the recent launch of the year’s Global Nutrition report, was at this moment behind bars. Nor did anyone bring up the lack of informed consent in the



FIGURE 9. Packages of Incaparina at a local health clinic are stored over the infant formula. “Proven nutrition, healthy and natural,” the packaging reads. Photo by author, 2018.

early days of the INCAP study. A skeptical researcher in attendance told me at one of the breaks, “The INCAP study is big business today.” The concern she alluded to was that the ethics on display were not intended to repair past harm but to secure the legal right to continue to collect and analyze data (see also Petryna 2009).

The study also lives on because the specific supplement designed for the protein communities is widespread throughout Guatemala today. When the INCAP scientists began to devise the study they brought in US anthropologist Richard Adams to help them mimic a thick, warm drink of ground maize called *atole* that was a staple in Maya communities. At the time, most supplemental nutrition drinks targeted infants in the form of a milk-replacement formula, but the research team decided to create a product that could be consumed by everyone in the family. They added protein-rich cottonseed and soy oils to corn flour to create a dry powder that, when added to boiling water, was comparable in its protein content to whole milk. As mentioned in chapter 1, Adams would become a founding figure for the field of applied anthropology, in part because of the tremendous success he had making the supplement used in the feeding trial palatable. The supplement, today called Incaparina—a combination of INCAP and the Spanish word for flour, *harina*—would become tremendously popular throughout Guatemala. It can be found anywhere from supermarkets to corner stores, sold in bags full of powders to be mixed with hot water or milk, or in ready-to-drink juice-box form with a straw attached.



FIGURE 10. Staff at a rural Guatemalan school in the department of Quetzaltenango prepare Incaparina for their pupils. Photo by author, 2009.

When Incaparina was developed in the years leading up to the Oriente Study, scientists envisioned it as a low-cost, non-animal-based protein supplement that could be disseminated at scale. Because they could not manage this production process themselves, they licensed it to the *Cervecería Centro Americana*, the country's largest beer manufacturer, which held a monopoly on the production of beer in Guatemala until 2003 (Reeves 2013). An underrecognized footnote in Incaparina's history is that the lead scientist, Carlos Tejada, was married to a woman whose family, part of Guatemala's Castillo oligarchy, owned the *Cervecería*. Some scientists insist that the Castillos did INCAP a favor in the 1960s, since INCAP would not have been able to scale up production of Incaparina without the *Cervecería's* help and the royalties received by INCAP for the supplement have been significant for the institute. Nonetheless, the fact remains that the supplement has been extremely profitable for the beer company.

At its inception, the scientists involved in Incaparina's development had obtained a fifty-year agreement that INCAP could control the formula. The agreement expired several years ago. Today the ingredients of a product popularized as "good nutrition" are controlled entirely by commercial food producers and full of sugar and artificial flavoring. I don't want to overstate its cultural acceptance: many Indigenous communities have not traded their atole for the supplement. For them, it matters greatly where and how maize is grown and ground. But throughout Guatemala, people consume Incaparina's seemingly magical nutrition

powders with the sense that they are improving their life prospects. “Good for the whole family!” the recognizable red and yellow packaging announces, along with the message that it is an excellent source of six vitamins, iron, and zinc. Viewed widely as a national beverage and a source of Guatemalan pride, it is distributed to children in rural and urban schools as part of their feeding programs, and it is found in the kitchens of Guatemalans who are rich and those who are poor.

The Human Capital study also lives on in Guatemala through its influence on development programs, which have come to prioritize supplemental nutrition above other forms of care. In the communities outside of San Juan Ostuncalco, where aid workers have an active presence, three kinds of supplements circulate. Health workers distribute Incaparina, VitaCereal (a powder similar in composition to Incaparina distributed by the World Food Programme), and USAID’s corn-soy power blend, all of which vie for a place in people’s homes. Despite the widespread failure of subsequent nutrition intervention experiments to make children taller by feeding alone, described in chapter 2, nutrition supplementation remains the pillar of Guatemalan development. Aid workers travel to communities decimated by centuries of colonial, imperial violence. They arrive measuring and evaluating height, reporting back that Guatemalans rank among the shortest people in the world. The primary solution they offer in response is a nutrient powder, suggesting that this is the key to future development.

HUMAN CAPITAL FOR WHAT?

When I met Eloida in 2016 she had just finished nursing two girls, both a few months shy of their third birthday. The girls eyed me warily as Eloida and I talked in the sunny courtyard of their home. A few hours later, their shyness worn off, they were playing happily with a few stray chickens and sticks they had fashioned into swords.

Eloida was a regular participant in the maternal nutrition programs held in her community. Every month, she attended classes where educators demonstrated how to prepare protein supplementation and sent women home with packages of the powder. The instructions for making the powder into atole were pinned above her woodstove. On another wall, just under a folded towel printed with a US flag that she was using to store onions, she had hung a flier with recipe suggestions, such as adding the powder to oatmeal or mosh. According to global health standards, the children playing around us were small but not stunted in their size.

The maternal health programs would warn Eloida and the other young women in her community that being short was bad. When handing out the bags of protein, the educators would tell them the powders would make their children taller and healthier—giving them an advantage in life. This was a potent message for women in the community, who had trouble finding employment and had routinely experienced discrimination because of their appearance.

In Eloida's case, her reason for weaning the children who played around us was common in her community: she had a newborn daughter. Less common is that the girls she had been breastfeeding were cousins. Eloida nursed her older sister's child so her sister could continue her education. Rural communities like theirs have no upper-division classes. Primary schooling takes place for a few hours a day in buildings that frequently lack finished walls or ceilings, let alone books or pencils or other basic school supplies. Though the law stipulates that children must attend school through the sixth grade, attendance is spotty, with parents feeling that the time spent in these underresourced classrooms is a poor use of their children's vitality. Most children, especially girls, stop coursework entirely once the years of primary schooling end.

To attend secondary school, Eloida's sister had to travel several hours from home, and because of the length and cost of the journey, she stayed away for several days at a time. I was nursing a small child myself when I first met Eloida and was struck by how hard this must be for both the sister and Eloida, who was in the position of juggling three children under the age of three. But she laughed away my concern. She had plenty of milk and her mother-in-law's help with caretaking, and she was glad to be able to do this for her sister and her niece. Separation from children is common in these parts, with many mothers stretching their care from Mexico or the US. Kitty-corner to her house, grandparents were raising children whose parents migrated in search of work years earlier. Two houses away, there was a similar story of family separation, with the mother working in the US. In comparison, a few hours of distance was manageable.

Meanwhile, so much was not manageable. In 2018, the mayor of the city of San Juan reported that "15,000 of the municipality's 78,000 inhabitants live in the United States" (Tisdall 2018). I find the way he phrased the statistic revealing, since it speaks to the fundamentally mobile character of residency in the community. The idea that one in five *inhabitants* live elsewhere is a vexing claim for a statistical apparatus that imagines that people inhabit a single residency, but it reflects how San Juan families are dispersed across continents.

While Maya people have a vibrant, often joyful tradition of migration (Velásquez Nimatuj 2020), this is not the community's general experience of migration today. Several people—and it's a small community—have died while crossing into Mexico since I began following health workers there in 2008. In the weeks after a US Border Patrol guard murdered Claudia Gómez González, when international journalists were still paying attention, the media reported two other deaths from her small cluster of communities. Darwin Ovidio Vásquez Romero and Marvin Garcia Cabrera drowned in the Río Bravo (Tisdall 2018). Media coverage of Claudia's community stopped a few weeks later, but the devastation did not. The community has been torn apart, with many children raised by extended kin. They may have contact with a single parent, or both parents may be gone. Everyone who has remained is living through death and disappearance.

In the terms of global health, Eloida's daughters were a success, measuring within the range of "normal" on the growth charts. But these were not the terms of success that generally mattered to Eloida's community, where the push to improve human capital by making children taller seemed largely misdirected. If anything, the equation between height and intelligence stigmatized Maya-Mam people for their size, further limiting their opportunities for employment. The equation between height and intelligence entirely overlooked the problem that human capital projects aim to produce not only "health," but more fit workers, who are routinely killed in pursuit of a living wage.

DEVELOPMENT AS DESTABILIZATION

Let's circle back to when the INCAP study started, because there is something else that is necessary to know. When the scientists arrived in Guatemala as part of Johnson's War on Poverty, there was another war under way. At the same time that the US government was fighting poverty, it was also spreading it—destabilizing peaceful and popular land reform in Guatemala, inciting a genocide that targeted Indigenous people. The goal was not to make them healthy or economically "productive" but to kill them and to make their deaths painful to incite widespread fear.

Pérez Molina, the president who initiated the Window of 1,000 Days agenda in Guatemala, was a graduate of the notorious School of the Americas, where the US military trained Guatemalans in the skills of torture and violence. The death squads over which he presided followed tactics of cruelty honed by the US military during previous wars. Howard Hunt, head of the CIA in 1954 when President Árbenz was deposed by the US-backed coup, compared the US military to Nazi forces when describing US efforts to destabilize Guatemala: "What we wanted to do was have a terror campaign—to terrify Árbenz particularly, to terrify his troops, much as the German Stuka bombers terrified the population of Holland, Belgium and Poland at the onset of World War Two—and just rendered everybody paralyzed" (Hunt, cited in Curtis 2002).

Pérez Molina worked under General Efraín Ríos Montt, who described the military strategy he deployed as "taking water from the fish" (*quitarle el agua al pez*). The phrase implies that the military would achieve victory by attacking civilians as a proxy for the enemy, forcing suffering on everyone as a means of starving their adversaries of support. As the UN-sponsored Guatemalan Truth Commission later reported, the real goal was genocide, with the violent massacres serving as means to eradicate the left, to destroy its connection to Indigenous communities, and to achieve cultural and political-economic domination (CEH 1999).

The Oriente Study was not carried out in Indigenous communities. Scientists at the time explained that they made this choice because they needed to work in Spanish-speaking settings. But it was also the case, as some of the scientists told

me, that INCAP's researchers had found that Indigenous people frequently did not welcome scientists. One scientist reflected that shortly after arriving at INCAP in the 1970s, its director relayed a clear message about where to set up research: "Don't try to work with the Mayans because you can't work with them."

But even if the Oriente Study was carried out in non-Indigenous communities, it was designed with Guatemala's "poor," "malnourished," "underdeveloped" Indigenous communities in mind. As Nevin Scrimshaw (1967, 495–96) wrote, "In El Salvador and Guatemala, the predominantly Mayan Indian children are malnourished in the preschool years. They are also greatly stunted in early growth and are much smaller in stature as adults." The intention to shift from non-Indigenous experimental sites to eventual interventions in Indigenous communities was always clear.

In the 1970s, at the same time the Oriente Study was rolling out, INCAP also began rolling out a massive education and promotion campaign to introduce its supplement to potential consumers. An anthropologist working in Guatemala at the time noted that the campaign used the language of nutrition to justify not only health but also cultural intervention in Guatemalan communities (Diener 1982, 258). The new ideas about food and feeding that INCAP was promoting would radically change mealtime structures and, with this, the broader fabric of community life. "Nutrition" helped authorize surveillance that would soon become commonplace through health and height monitoring programs. Another advantage—this one financial—would come from the creation of new and expanded markets for health food supplements soon to be sold in Guatemala—and throughout the world.

PROXY SUBSTITUTIONS

There are numerous proxies in the stories of nutrition and American science that I presented above, but an especially important one is height for intelligence. A 1980 article in the *American Journal of Public Health* drew from the Oriente feeding trial to report that a high-protein diet in early life improved cognitive performance and that body measurements were the most efficient way of assessing deficiencies in the diet: "Height is generally the best indicator of extended nutritional deficiency; head circumference is most sensitive to malnourishment before the age of two years" (Freeman et al. 1980, 1279).

A 2013 review drawn from the Oriente Study carried out by a team of economists further shored up the equivalence between intelligence and height. After analyzing data that said that well-fed babies grew significantly longer, they summarized the findings:

Stunting is a marker of systemic dysfunction during a sensitive phase of child development. At the same time that growth failure is occurring, growth and

development of other organ systems, including the brain and neurologic development, are affected. Therefore, stunting is a summary indicator of all influences that have an effect on growth and development during the first 1000 d of life from conception to 2 y. Consequently, stunting has been linked to many adverse outcomes related to later physical and cognitive development. (Hoddinott et al. 2013, 1170)

In the communities surrounding San Juan Ostuncalco, health and development workers try to teach Maya-Mam women to care about becoming tall. While the public health community may treat height as a “marker for system dysfunction,” in daily practice it becomes used as a means to discriminate against Maya people.

To understand the shift between “there are positive health effects to being tall” to “short people are undesirable,” we must return to the origins of the Oriente Study. Initially, the study had two protein communities, two fresco communities, and two control communities where nothing would be given. The control communities were deemed “too expensive” and were cut. As time has passed, scientists have come to treat the fresco communities as if they were control communities. In a retrospective publication, Scrimshaw (1998, 355) explained this as follows: “A non-protein, low calorie beverage was given *as a control* to balance the stimulation received by the children in the Incaparina group from daily contact with the field workers” (emphasis mine). Follow-up studies done by INCAP routinely described fresco as “a low-energy drink (59 kcal per 180 mL serving) that contains no protein.” Though it may have been “low-energy,” the fresco community found the drink refreshing and drank three to four times more than the protein group, which ended up providing a roughly similar amount of calories and a lot of added sugar. In other words, the control group was never a control.

In the logic of the group-randomized trial, the communities are supposed to be interchangeable. The foundation of a randomized control experiment is that only one significant variable—the *independent* variable—is altered. But, of course, life is not a laboratory. Three of the communities were in the cool, wet highlands, with Santo Domingo (fresco) and Aldea San Juan (protein) in an area where soil was especially shallow and rocky and prone to erosion (Maluccio et al. 2005). The fourth community, Espíritu Santo (fresco), was in the warm, dry lowlands with deep soil that attracted capital investment, agribusiness, and large-scale landowners, which led many of the participants into wage labor. This community was but a kilometer from the municipal capital, making access to urban health and education services easier for residents here than in the other communities. Meanwhile, Santo Domingo was also comparatively urban: located just thirty-six kilometers from Guatemala City, the town was near a road that became a major highway over the half century that scientists studied the feeding trial babies. Unlike the other three communities, which experienced economic booms and busts from crops such as manioc, tobacco, tomatoes, and sorghum, residents of Santo Domingo were never reliant on commercial agriculture.

Another detail that jumped out at me when I read about the communities: the larger of the two atole communities, Conacaste, established a large horticultural cooperative shortly after INCAP's protein trial concluded. This cooperative operated for most of the 1980s, providing stable jobs to hundreds of women through that decade. Meanwhile powerful estate owners historically controlled the land in the larger of the two fresco communities, Santo Domingo, resulting in its residents being among the last to receive property titles during the 1940s agrarian reforms. By 1987, unable to grow food on their own property, a majority of Santo Domingo's residents were migrating to Guatemala City for work. It seems to me that these facts of employment and labor might have a direct effect on systems of capital—human and otherwise—but scientists analyzing the study rarely mentioned how these differences might disrupt their comparisons of protein and fresco. None of these differences in location, climate, and community structure seems to have been treated as meaningful. The only differences scientists seemed to care about relate to supplements in the diet.

And while the Raven's intelligence tests are touted as culture-free tests of intelligence, INCAP researcher, Patty Engle, has pointed out that this is wrong: there is no space without culture. Tests developed in a place that prioritized memorization, repetition, and test taking may completely fail in a place that valued problem solving or interpersonal skills (Engle and Fernández 2010, 86). Different ways of thinking that scientists call "intelligence" are not just measured by tests, but legitimized by them.

There is also no control for the fact that people respond to differently sized babies in different ways, which comes to shape these babies over their lives. Short people may have had trouble finding work, not because they were impaired by biological stature, but because they were impaired by discrimination. There is no possible control for stigma in a world where scientists ignore how their results can feed into and reproduce racism.

Recall that the scientists involved in the early days of the Oriente Study wanted to show that care was critical in early life in order to make a case for the importance of preschool and schooling more generally. "Forget that," a Guatemalan scientist who knows the study well has told me, adding: "Once the critical window is over, it's over."

This is a message echoed by global organizations. Nutrition International, a Canada-based policy and research center, tweeted to its audiences, "If children are cognitively damaged by malnutrition before they ever set foot in the classroom, education investments will never yield the desired outcome" (@NutritionIntl 2021). Margaret Chan (2010), director of the WHO from 2007 to 2017, put it this way: "Don't talk about bringing girls and children to school if you can't even give them the right mental capacity to start with to benefit from the educational system." While she may have been trying to improve infant development, the outcome is to discourage concern about what happens once babies grow up.

The focus on pregnancy and breastfeeding that resulted from the findings of the Oriente Study—itself initiated out of an interest in bolstering early childhood education—today disincentivizes investment in quality preschool and later-life schooling, which begins only after the end of the window of a thousand days. This investment would be “wasted energy,” an “inefficient use of resources,” or just “not worth it”—such was the economization of future life that I repeatedly heard from policy makers. And indeed, today there is no accessible secondary schooling for Eloida and her sister, as there were no opportunities for growth and professional development for Claudia Gómez González and Victoria Méndez Carreto or the many other women in the San Juan communities who were required as girls to sit for hours on end in classrooms that did not nurture their education. It is cheaper—more cost-effective—to invest in supplementing the food given to babies and women of reproductive age.

Paging through the history of the study as it takes shape in oral and archival reflections, I was struck by the basic fact that a US government-funded study fed thousands of Guatemalans two beverages with added sugar for nearly a decade, telling participants to consume as much as they wanted, and that the results have helped create an intervention that has become the foundation for global maternal health policy. The director of the Longitudinal Study of Human Capital briefly writes in a retrospective publication that people experienced the two beverages in different ways (Martorell 2020, S8). *Fresco*, like a juice or soda, was refreshing on a hot day. Meanwhile, people held *Incaparina*, which mimicked their most traditional and sacred source of corn-based nourishment, to be filling but did not find it refreshing. The scientists working in the four communities tabulated the amount of beverage consumed, paying no attention to how it might have been a substantively different experience to drink sugar water as opposed to a porridge of protein. No one publishing research based on data from the original Oriente Study ever talks about how these intimate textures of eating might have affected the outcomes of their experiment.

When interviewed about their experiences of the trial many years later, mothers of all four communities generally shared positive memories (see Madrigal Marroquín 2017). They recounted being especially appreciative of the health services that accompanied the feeding stations. As part of the study design, scientists provided all members of the community with basic health services, which may have helped save some of the children's lives as mortality in the testing sites seemed to be lower than in nearby places. But as I've read about the correlation between stress and health—sometimes while my own children nurse in my arms—I cannot help but think of the stress that mothers might have experienced as they were being closely observed and evaluated by foreign scientists at a moment when their surrounding communities were breaking out in war and people were being disappeared and killed. Did the presence of the teams of foreign scientists help keep them safe? If so, at what cost? As far as I can tell, among the researchers these questions remain unasked.

From the very beginning, many people voiced objections to Incaparina, as well as the broader foundation of American nutrition. The geographer James Newman (1995, 241) writes that “to many nutritionists and others, Incaparina’s story in Guatemala was filled with motives that were unclear, assumptions that were vague, and impacts that were ambiguous.” Others have critiqued INCAP’s ties to corporate interests. After all, the protein advisory group of the United Nations was powerful, but there was, in fact, no widespread lack of protein in the Guatemalan diet.

The cultural anthropologist Paul Diener, who carried out fieldwork near the Oriente feeding trial in the early 1970s, explicitly critiqued the attention given to protein deficiency as being beholden to profit. The year after Diener returned from his fieldwork, a nutrition scientist working at the American University in Beirut, Donald McLaren, published an article in *The Lancet* that argued that “the entire protein hypothesis had been a hoax, foisted upon an all too willing academic community through commercial expediency” (cited in Diener 1982, 259). He pointed out that the equation of global childhood malnutrition with protein deficiency was false. The attention given to Kwashiorkor globally was “built upon erroneous worldwide generalizations made from correct but limited observations in atypical situations” in rural Africa (McLaren 1974, 95). In the background of the scientific push for protein was a skim milk surplus accumulated in the US after World War II, then later an abundance of soybeans and, in Guatemala, cotton-seed oil from cotton grown for international markets along the Pacific coast. As Diener reflected:

It was useful to provide scientific “experts” who would proclaim these food items crucial. . . . Since Guatemala’s animal industry could not easily absorb all of the cottonseed cake available, it made good economic sense to create some other market for this byproduct. With a few generous grants to INCAP and to major American universities and researchers, the protein fiasco was born. Of course at the time it was justified as “socially-beneficial commercial development,” to use the words of Scrimshaw and his colleagues. (1982, 260–61)

The region where Diener was working had been the scene of peasant uprising and subsequent counterinsurgent action while he was there. Reflecting on the more than three hundred people who had been killed in the community where he lived, he characterized “social justice”—not protein deficiency—as the fundamental obstacle facing rural Guatemalans (1982, 256).

At a public lecture celebrating the Oriente Study’s fifty-year anniversary in 2019, the director of the Longitudinal Study of Human Capital mentioned that he had been thinking for some time about the “context of nutrition” at the time the study was designed (Martorell 2019). He went on to talk about the protein wars happening in the scientific community, with some scientists believing protein was the key to hunger and others rejecting this claim. The context of nutrition that the speaker pointed to was the driving impulse to fill “the protein gap” and how this concern for protein had ultimately limited the study’s design and execution.

A context he still did not bring into the room was that of the war taking place in Guatemala. He did not talk about how the same US government funding the study was also at the time training military officers to run effective death squads. He didn't speak of the racist origins of IQ science or how women were discriminated against in education or employment for reasons that had nothing to do with their "cultural practices" but because political leaders demanded women's subservience, particularly in the realm of reproduction. In his focus on the protein wars, he did not mention the attacks on poor communities taking place in the country as the feeding trial was carried out.

He ended his talk with a PowerPoint slide with a word cloud that featured the word *BIAS* in prominent letters. In foregrounding bias, the speaker meant that with fifty years of hindsight he could see that the focus on protein in the scientific community had kept researchers from considering the role of other vitamins and minerals, not to mention the epigenetic factors of human development that influence future health. "There's a lesson in how easy it is to be influenced by prevailing notions that shape what you have seen instead of what is there," he told his audience.

But "what is there" is not only an historia of how sugary nutrient powders shape embodiment for years, or even generations, to come. What is there is also an historia, still not fully acknowledged, of how commodifying food as nutrients, viewing bodies as potential capital, and assessing value through IQ tests may not, after all, make a better world. Along with this historia about the harm wrought by commodification, a parallel historia might be told about how fighting a war on poverty through nutrient science and supplements failed when it started and continues to fail today. Or in keeping with the argument about mal-nutrition made in this book, we might understand this not as *failure* but a technique through which powerful systems maintain and reproduce their power.

CONCLUSION: REPRODUCING POVERTY

The historia of the Longitudinal Study of Human Capital that I have recounted in this chapter is full of proxies. Protein stands in for good nutrition. Good nutrition stands in for IQ. IQ stands in for development. Development stands in for health. Health stands in for the worth of life. Non-Indigenous communities stand in for Indigenous communities. One village stands in for another. Guatemala stands in for "anywhere." Specific women become a universal woman. Science stands in for politics. Politics stands in for war.

Exploitation is foundational to commodity exchange, but the proxy substitutions of science are not necessarily bad or cruel in themselves. After all, the US-based Head Start program that was founded at a moment of US-backed Guatemalan genocide and political interventions can lessen the destruction of military violence. Noel Solomons, a vocal critic of the study, reflected somewhat

optimistically in an email to me: “No one denies that the Oriente study was a flawed study but clever people can glean a lot from flawed studies, especially since those are the only kind we have come far enough to design and conduct. I grant INCAP major credit for laying stuff out there that one can learn and move on from.”

Possibilities for harm arise when we lose track of the histories, when we ignore that what is erased is never just erased, when we forget that the proxy is and is not the thing that it becomes. For the people living in Espíritu Santo, Aldea San Juan, Santo Domingo, and Conacaste, the future was altered because scientists built feeding stations, filling them with solutions of nutrients and sugar. Expand outward, and you will see similar but altered strawberry- or vanilla-flavored supplements sold or delivered throughout Guatemala today with the warning that children will not grow well without them. Expand beyond Guatemala, and you will see health officials such as Jim Yong Kim drawing from the lessons of the study to encourage the global community’s expanded investment in human capital, pointing to how impaired early life biology holds poverty in place. Continue to expand, and the study will continue to gain new life. But even as proxy substitutions help build new worlds, what they built over still remains.

During the armed conflict, poor Guatemalans had a clear and cogent theory about how to disrupt the cycle of poverty. Unconcerned about “protein malnutrition,” they instead insisted on the importance of land and food sovereignty. While INCAP scientists spoke of nutrient uptake during pregnancy and infancy, poor Guatemalans spoke about securing property rights and equitable employment conditions. “Maternal nutrition” was not to be improved by scientists’ protein powders. Improving what people (not only women) could eat instead required challenging the dispossession of land and the exploitation of their labor.

As I turn to examine in the next chapter, treating fetal development as a proxy for economic development and an effective path to social equality undermined the reproductive and bodily sovereignty that Guatemalan communities desired. Investment in human capital kept women vulnerable and poor while claiming to help.

Critics were skeptical of the American approach to ending poverty from the beginning. Consider that in 1967 Dr. Martin Luther King Jr. gave a speech in which he said this about Johnson’s War on Poverty:

It seemed as if there was a real promise of hope for the poor—both black and white—through the poverty program. There were experiments, hopes, new beginnings. Then came the buildup in Vietnam, and I watched this program broken and eviscerated as if it were some idle political plaything of a society gone mad on war, and I knew that America would never invest the necessary funds or energies in rehabilitation of its poor so long as adventures like Vietnam continued to draw men and skills and money like some demonic destructive suction tube. (King 1967)

Exactly one year after giving this speech, on April 4, 1968, Dr. King was assassinated. Decades later, as scientists and policy makers use the Oriente Study to create a global movement to improve human capital, they are still not grappling with the context that American governments are fighting a war on one front that they are waging on another. The push to make children taller so as to make them healthier has come to prioritize individual height with the effect of harmful discrimination. An intervention designed to help improve support for early childhood education when it started in the 1960s is now used to disincentivize funding for schooling, which is assumed to be irrelevant since a child's future was set during the first thousand days.

Throughout Guatemala, health workers give women nutrient supplements and the advice to eat them so their babies will be smarter, even as these women are traveling long distances from their children because they lack any opportunities for professional advancement themselves. The historia that the nutrition community has yet to face is that a study once designed to bolster early childhood education has come to reproduce the very problem of poverty it claimed to fix.