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Abstract

This chapter extends anthropological analyses of "alternative reproductive technologies" by examining how kinship systems are shaped through the continuous biological reproduction of feeding and eating. It focuses on the dilemmas faced by women in Xela, Guatemala who live among changing food economies and rising rates of metabolic illness, and who must reform their existing skills and expertise to accommodate new quantitative technologies of health. As epigenetic discourses emphasize the impact of women's nutrition on the health of their kin, these technologies come to affect not only the way they understand their food and their bodies, but also their pathways of reproduction.

Biographical Sketch

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Bodily Betrayal: Love and Anger in the Time of Epigenetics

We have then always to be prepared to speak of production and reproduction, rather than of reproduction alone. Even when we have given full weight to all that can be reasonably described as replication, in cultural as in more general social activities, and when we have acknowledged the systematic reproduction of certain deep forms, we have still to insist that social orders and cultural orders must be seen as actively made: actively and continuously, or they may quite quickly break down.

— Raymond Williams (1982)

Studies of kinship have been central to anthropology since its inception, whether in the work of structural-functionalist anthropologists focused on systems of descent, forms of marriage, and rules of postmarital residence as the building blocks of social structure; structuralists concerned with exchange, reciprocity, and alliances among unilineal descent groups; or interpretive anthropologists focused on symbols and systems of meaning. With the advent of feminist anthropology in the 1970s, studies of kinship were revolutionized: attention turned to understanding kinship as a system of power, which produces and sustains inequalities. Essential to this shift was a denaturalizing of kinship and a decoupling of the biological and the social, which opened understandings of how ethnicity, class, gender and other forms of difference shape local experiences and representations of kinship, marriage, and household (Peletz 1995:362; see also Schneider 1968).

This decoupling of biological and social reproduction was, [however](#), soon complicated by burgeoning studies of assisted reproductive technologies (ARTs). While Marilyn Strathern

pointed to ARTs as a challenge to the naturalization of the “facts of life” – having sex, transmitting genes, and giving birth (1992:5) – recent work on ARTs, which builds upon the classic insights of feminist anthropologists such as Rayna Rapp (1978), Gail Rubin (1975), and Jane Collier and Sylvia Yanagisako (1987), has reinforced the constructed “nature” of kinship while at the same time uniting ontological domains such as “the biological” and “the social,” which were often held apart in early feminist analyses (see Edholm, et al. 1978). The advent of technologies such as artificial insemination or surrogacy has separated the egg, the womb, and the mother, thereby blurring divisions between genetics and labor and consequently transforming understandings of parenthood itself (eg. Franklin and Roberts 2006; Inhorn and Birenbaum-Carmeli 2008; Thompson 2005).

Much of this work on ARTs, [however](#), has focused on conception and pregnancy, circumscribing “assisted reproduction” within the realms of genetic insemination and fetal development. I suggest that assisted reproduction must be understood more broadly in a world where ideas about health and nutrition are increasingly linked to epigenetic research that suggests that genetics are shaped not in a moment of conception, but over the course of one’s life. While genetic research has shed new light on why one may be predisposed to certain health disorders, epigenetic studies stress that food consumption throughout one’s lifespan affects physiological development and disease susceptibility not merely for an individual, but also for her progeny and theirs. As epigenetic research infiltrates local discourses in many areas of the world, women—who continue to be primarily responsible for cooking for and feeding their families—are sent a message that goes beyond “you are what you eat.” It implies that your children, and even your grandchildren will be what you eat as well. To ensure “healthy outcomes” for themselves and their families, women are now encouraged to adopt “modern”

styles of food preparation, recent technologies through which to evaluate food (and health), and new ways of relating to their bodies. These changes affect understandings of heredity and kinship, as the biological reproduction of one's genealogy is no longer confined to sexual intercourse— or even to the wide range of “assisted” technologies in which gametes might meet. Instead, every time a woman eats, and every time a woman feeds another, she engages in an act of biological reproduction with far-reaching consequences. During research conducted in the highlands of Guatemala, I saw that as these technologies altered women's traditional mode of kinship reproduction, the embodied response often took the form of anger, illustrated in Mama Carla's story below.ⁱ

Mama Carla's Anger

“I am angry,” Mama Carla first told me one day when we were lingering at the lunch table having finished eating, but not yet wanting to turn to the stack of dishes and other afternoon chores that awaited us. I had known her for several months. First we cooked together. Then I moved into her house, and after two months I had already lived with her longer than most of my homestay families. The meal we had just eaten was delicious—chiles rellenos, made with peppers that had been individually peeled, battered, stuffed with a filling of chicken and beef among various vegetables, and covered in a slowly simmered sauce. “Served with love,” Carla had said when setting them in front of us. She didn't seem to be angry, and at first I thought I had misunderstood. But she repeated herself, with quiet resolve, “I am angry.” Now sure that I had heard correctly, I asked her to explain. At first she said nothing. Then, she whispered, “this diabetes has turned me angry.”

Carla had told me before that her family often forgot she had diabetes. Given how active she was – an energetic housewife and enthusiastic cook – it was easy for me to also forget that

Carla was in any way ill. That day in the kitchen, however, she reminded me that while her diabetes might not have been visible, it nonetheless haunted her. She told me that for years before she received her diagnosis she had known something wasn't right. She couldn't think clearly at times, would unpredictably feel deep pain in her knees, and her thirst and appetite were irregular and often felt out of her control:

And then they took my blood and suddenly, in an instant, I had an explanation, and medication, and rules. '*Forever,*' they said when I asked how long I had to take the medication they gave me. '*You will always have to take this medicine. And you must try to lose weight. You must also be careful to feed your family well. They could get this too,*' they said. I started to feel very angry that day. I am still angry.

I was surprised, sitting across the table from Mama Carla, to hear her speak of instantaneous change brought on by this diagnosis. I knew that she often didn't take her medicine, which she kept tucked away in her kitchen in one of the tins used for spices. It was expensive, and she did not use it prophylactically, but as an antidote to pain or tremors in her heart. I also knew that she frequently awoke with a weakness in her limbs— several times I found her sitting at her kitchen table in the quiet of the early morning, in too much discomfort to sleep. Diabetes may have given her the certainty of a diagnosis, but she still lived with deep and lingering uncertainties about whether the pains she felt were severe enough to take to a doctor, or whether she was strong enough to wait until they passed. I dutifully wrote about the conversation in my fieldnotes, but I

didn't realize until much later that what diabetes took from her – and the anger it left her with – was only tangentially connected to her physical pain.

Kinship and Reproduction

How do we make sense of Mama Carla's anger, and of the anger of many other women I encountered during my fieldwork? While living in Xela, Guatemala I studied techniques of body weight management in the context of what scientists call "the nutrition transition"— a worldwide transition occurring in the shadow of urbanization as processed foods replace staple foods, and lifestyles and bodies transform in response (Caballero and Popkin 2002). In this chapter, I draw attention to the new culinary obligations that nutritional discourses tied to these global changes have placed on women such as Mama Carla. I suggest that as these women reform their existing expertise to accommodate quantitative technologies of health, their anger must be understood within changing idioms of kinship and reproduction.

In Guatemala – as in many countries in the world – widespread migration from rural communities to urban centers has been accompanied by a series of chronic illnesses dubbed by the public health community as "diseases of modernity." Due, in part, to international trade agreements that have transformed the region's food economy, Xela has seen rising rates of diabetes, heart disease, hypertension, and a range of other illnesses correlated to dietary practice (Groeneveld, et al. 2007). New understandings of health and well-being, and the introduction of technologies aimed at changing illness profiles, have come into conflict with the longstanding domain of women's culinary activities. Food preparation and the feeding of their families have long been a source of women's pleasure and power. But now, as concerns about calories, body-mass index (BMI), and triglycerides replace the slowly cultivated experiences and understandings of taste, smell, and touch that were the traditional basis of women's culinary

expertise, cooking and feeding produce deep unhappiness, frustration, and anger for a generation of women who have devoted their lives to their homes and families. Metabolic illnesses have come to recast as potentially harmful the practices these women have long believed to be of value, calling into question their gendered role as family caretaker, and their skills of mothering.

After outlining the traditional links between women and food in Guatemala, I return to Mama Carla to explore how cooking and feeding today are not just creative, but procreative projects and how they are being altered and undermined in this time of epigenetics. I show that epidemiological transformations and transitions in the global food economy have brought with them ontological changes in how women understand their bodies and motherhood, and thus the very nature of kinship.

From “Food is Love” to “Food is Health”

For centuries, if not longer, Guatemalan women have been responsible for central aspects of food production— from cultivation and harvest, to selling produce in markets, to boiling and grinding corn into *masa* with which to prepare tortillas. Anthropologist Lois Paul’s descriptions of “the hearth” in the Zutuhil village of *San Pedro* in the 1940s provides a sense of the gendered divisions of labor in the region’s recent history. She writes:

The hearth and its fire are the heart and shrine of woman’s domain and must be treated with special care... One of the three stones is known as the grandmother stone, and it is a sin even to move this sacred stone. The umbilical cord of a baby girl should be placed under the grandmother stone so that the girl will stay at home when she is grown. A boy’s umbilical cord is hung in a granary so that he will work well in the fields (Paul 1974:284).

During my time in Xela, men snickered at my questions about cooking, telling me this was not their domain. In schools today today, when teachers give instruction on “home economics,” they still first send the boys out of the classroom.

The traditional link between women and culinary caretaking has been reinforced by the proliferation of campaigns advertising convenience foods throughout Guatemala in the last few decades. Instant foods (consommé soup packages, sandwich bread, yogurt, etc.) might have decreased the responsibility women have to feed their families, requiring less skill than foods cooked slowly and allowing anyone to prepare them. But ads for processed foods almost exclusively portray women in traditional gender roles, thus further cementing an image of women as domestic attendants. And, in the homes where I lived, “convenience foods” such as pasta, rice, or white bread, did not ease the obligations entailed in cooking, but were incorporated into and added onto already existing techniques of meal-preparation. As historian Katherine Parkin explains, more than a century of ads for food have held “women responsible for their family’s health, status, and satisfaction because they claimed that, in the hands of women, ‘food is love’” (2006:11). While her research was based on ads developed for 20th century US markets – for example a 1957 ad stating “Mother Never Ran Out of Kellogg’s Corn Flakes,” or a 1939 ad for Kraft Macaroni-and-Cheese where a businessman stated to his smiling wife, “Just starting dinner now? I’m hungry!” – food companies (including Kellogg’s and Kraft) employ many of these same strategies in Guatemalan ads today.

Such ads coincide with a common sentiment expressed by both men and women in Xela that women are now responsible not just for feeding the well-being, but for the *dietary health* of their families. I conducted much of my fieldwork in the nutrition clinic of Xela’s public hospital;

when men arrived without their wives or daughters, the nutritionists would gently chastise them for not bringing the person in their household who cooked. When men were accompanied by family members, questions about their eating habits were addressed, often exclusively, to women. When it comes to the dietary health of their families, women are assigned responsibility in a way in which men clearly are not. An intimate gendered division of labor shadows the dining table, and the health clinic, as well.

The centrality of culinary caretaking in women's lives is not lessened by contemporary discourses of chronic illnesses and epigenetics. But these discourses have changed the ways in which food is valued. As food becomes assessed not through immediate registers of pleasure and taste but through abstract nutritional standards, women who have traditionally reproduced themselves through connectedness and intimacy must now look to discourses of "health" to express love. Herein lies a paradox: although epigenetic views of heredity assign to women deep responsibilities for dietary health, at the same time they suggest that these "diseases of modernity" are far beyond their control.

Lovers of the Home

We can only begin to understand Mama Carla's anger, I suggest, when we consider the changing context within which women's traditional position as food preparer and housewife unfolds today. Like many of the women I lived and worked with, Mama Carla spent her days in line with the Guatemalan term for housewife, *ama de casa* (from *amar*, to love; *de*, of; *casa*, home). As a most dedicated *lover of her home*, she cooked elaborate meals for her husband and four children. Her lunches were almost always a several-course feast, and in a city where leftover beans and tortillas made an adequate dinner, she would instead cook an entirely separate meal—blending and frying whole beans into *frijoles volteados* and scrambling eggs, which she served

with fresh tortillas, homemade salsa, guacamole, and cream. She also rose before sunrise to wash clothes so they would dry in the morning sun, and scrubbed the piles of dishes that had accumulated during the day until well after sunset. Cleaning the rest of her home and shopping for groceries consumed the remainder of the day. After the first time Mama Carla told me she was angry, she began to tell me this more often, always in the calmest, quietest tone. When I told her that she didn't appear to be angry, she would stubbornly add, before changing the subject: "*It may not look like it, but I am angry.*" I never saw any outward signs of this anger. She didn't raise her voice, didn't contradict her husband, and never scolded her children. But in that quiet whisper she would say it to me, "*I am angry.*"

Carla passed most of her time working by herself. Like many in Xela – whose population has risen from roughly 36,000 in 1950 to more than 200,000 today – she had moved to the city from the countryside. Her house was on the same block where many of her in-laws lived, but she was not as close with them as they were with each other. "*You and I get along so well because we're both outsiders,*" she told me several times. Her home was also separated from that of her in-laws, who lived in adjacent homes that shared a common kitchen. Her husband, Miguel, had studied in university to be an architect. Though he now worked (when he could find work) as a construction site manager, several years earlier he had remodeled their home, basing the design upon his vision of "the modern style," (*el estilo moderno*). He had segmented several of the larger communal spaces – the courtyard, for example – into smaller, private rooms. This meant that each of the children technically had their own bedroom (though in practice, the younger girls still shared a room and often slept in their parents' bed), and that they also had a room to offer to me. This "modern style" also meant that instead of an open kitchen, Carla cooked in a relatively secluded corner of the house. She was very proud of her kitchen, but also spoke of being lonely.

She told me that she had learned to cook surrounded by her mother, sisters, and friends through patient observation and experience. She said her mother had taught her to make tortillas by holding her hands, so they could form the dough together. “There was no such thing as a mistake and there was nothing that couldn’t be readjusted,” she told me. This was in sharp contrast to the “healthy cooking class” she attended while I lived with her, which provided her detailed recipes with carefully measured instructions: 2 tablespoons canola oil, 8 oz chicken breast, ¼ cup nonfat yogurt, 1 package of Splenda. She threw the recipes away when she brought them home, since she had neither scale, nor measuring cups, nor money for Splenda. Cooking, for Carla, was not an experience in exactitude or accuracy but instead a practice in forming relationships. Every once in a while she would tell me that she would have liked to be able to run a restaurant out of her home, to serve groups of people. But she always laughed when she said this, explaining that she could never do this because she did not like to charge people for food.

Isolation was a complaint I heard from many women in Xela. Whereas they had stayed at home as children to help their mothers, their own daughters now largely attended school during the days, and spent much of their evenings doing homework. Kitchens and the activities surrounding cooking were also once shared by many, and in some of the homes where I lived, sisters, sisters-in-laws, daughters, and mothers still divided cooking duties among them. But newly built homes – and given Xela’s expanding population, there were many – and those such as Carla’s that had been remodeled included a “modern kitchen” that presented women with the double-edged sword of solitude— the space was theirs, but so too was the obligation of meal preparation in isolation.

While Mama Carla cooked, she would talk with me about her frustrations. Money was high on her list. She and Miguel kept their finances separate; he gave her an allowance for the

family's groceries, but if she wanted more money than she could make from selling food door-to-door – which she did roughly once a week – she had to go to him, and she referred to him several times as stingy [*tacaño*]. Carla was also burdened by the problems of her two older children, from a separate marriage. Her eldest daughter had accumulated thousands of quetzales of debt. Her only son had just had his second child – with a different woman than his first, born when he was fifteen – and, having just been fired, was unable to support himself let alone his wife and newborn. There was also her health, a persistent worry. Carla needed relatively expensive pills for her diabetes, which meant going to her husband for money, and even when he acquiesced, she rationed her pills to make them last longer. I knew she was bothered by her heart— both by the pain she felt there, and by the fear of what the pain might mean. And then there was the health of her family. “He’s getting too skinny,” an uncle had said to Carla while looking at Miguel one day over dinner. Carla had told me that week that she was concerned that Miguel wasn’t eating enough. He had come down with a severe flu earlier in the year, and did indeed look gaunt. Whereas Carla wanted her husband to “fatten-up” (*engordarse*), she worried that her cooking was making her eldest daughter Lizbet was overweight (*con sobrepeso*). Lizbet, who at 25 was still unmarried, had recently been diagnosed as pre-diabetic. Carla took responsibility for this, and tried to accommodate a range of needs in the meals she made.

I knew Mama Carla had many worries. But I never saw her visibly act on the anger she confessed to me. And though she felt she had barely enough money to get by, those seated at her table were always fed with incredible generosity— her husband, her children, the local pastor, a teacher from their daughter’s school, an out of town friend, and myself. Once, after friends of her son had come to dinner and eaten helping after helping, requesting more until all was gone, I asked if it made her angry to see them devour her food as they had. She seemed startled by my

question. “No, this is the way I like it. It’s the way my mother did it too. People do not go hungry in my house,” she responded. There were a few times that she complained about guests offending her in one way or another, but having a large appetite was never rude. She always offered extra, and nearly always had beans on the stove as a backup in case the primary courses she had prepared ran out.

The ability of women in Xela to keep their families full has been greatly influenced by international regulations such as the Central American Free Trade Agreement (CAFTA), which took effect in Guatemala in 2006. CAFTA extended the reduction in tariffs first promulgated with the passage of the North American Free Trade Agreement in the mid 1990’s, resulting in the increased availability in Guatemalan marketplaces of pork, poultry, soybean meal and yellow corn, as well as highly processed foods such as potato chips, sandwich cookies, frozen French fries, and prepackaged Kraft cheese (Hawkes and Thow 2008:352). This process of “trade liberalization” has also encouraged the proliferation of supermarkets, such as Wal-Mart, Ahold, La Fragua, and Carrefour whose presence more than doubled in the 1990s (Asfaw 2009). While people could remember just one grocery store in Xela a generation ago, numerous Wal-Mart subsidiaries now spread throughout the city. The women I lived with did not like shopping at these stores, and always bought their produce in the busy outdoor markets where they had relationships with vendors. But staple commodities such as sugar, oil, rice, pasta, cereal, and even beans and corn-flour were much cheaper in the supermarkets, and they counted on these goods to fill the stomachs of their families in ways that vegetables alone would not. The price of meat – particularly imported chicken, which was sold by neighborhood butchers – had also dropped considerably. Mama Carla complained about the taste of this chicken and went to great lengths to buy *pollo medio criollo* (partially farm raised chicken) from vendors in the hillsides

outside the city. Still, given the relative low cost of “factory chicken,” the disappearance of vendors who sold locally raised chicken, and the prestige associated with meat consumption, she often simply tried to cover what she called a “taste of chemicals” with sauces and spices.

Many of the themes in Mama Carla’s conversations with me reverberated in the stories of other women with whom I lived and worked in Xela. I heard countless stories about the exhaustion and powerlessness women felt in their role as housewives. They felt overworked, but also worried they were expendable. They were lonely, but also felt pulled by those around them in a million directions. They loved their children and their husbands – they were always quick to qualify their complaints with this assertion – but they also grew tired under the weight of their responsibilities. And now with the recognition of their own illnesses, these demands often conflicted with the advice they have been given by their doctors. As one patient diagnosed with obesity at the public hospital told me when I visited her at home, “I spend so much time managing what everyone around me eats to keep them healthy that I have no energy left to care also for myself.” After three visits, which took place over three months, she still had not lost any weight and decided not to make a follow up appointment. When I later asked her why, she said she had decided that the problem with her weight had nothing to do with the food she ate, but with the life she led.ⁱⁱ

Sex and Food

The anger felt by Mama Carla and other women with whom I spent time was related not only to their experiences of isolation, the stress of work, or precarious financial circumstances, but also to deep transformations occurring in their reproductive practices. Anthropologists have long connected the social status of women to sexual reproduction, where virginity for unmarried women and monogamy for married women were of utmost importance to ensure that their

children would inherit their class privileges. In Guatemala, marriage and having children are activities tightly controlled by men, the church, and the legal system, which historians suggest was established, as in many places in the world, so that a husband's children would inherit his property. Laurel Bossen refers to Guatemalan Civil Law 106 which emphasizes the significance of women's role in child care: "[w]ith the birth of the first child, the woman must understand that her mission is in the home, and except for very special circumstances she must not neglect her children" (Bossen cited in Smith 1995:736). This law remained in effect until the late 1990s. Although many people suggest that sexual mores in Catholic Guatemala are less restrictive today than in generations past, rules of marriage and sexual conduct continue to be closely tied to ideas of social legitimacy within the family, the community, and the nation-state. Women have, however, developed ways of getting around this control, especially with regard to birth control and abortion practices. They have also sought technologies other than sexual intercourse resulting in genetic/"blood" progeny to (re)produce their status and power.

Sexuality and eating, in Guatemala as elsewhere, are deeply enmeshed, both offering means of "'placing' oneself in relation to others," (Goody 1982:2; see also Meigs 1984; Popenoe 2004). Given the tight restrictions and regulations placed on sexual reproduction, Guatemalan women have also long turned to culinary forms of reproduction as a mode of asserting their social value. At the same time, however, sexual intercourse and feeding/eating are not always directly analogous: for example, while the meaning of sexuality is often over-determined by sexual intercourse, conjuring a vocabulary of penetration, dominance, seduction, resistance, and submission, feeding and eating entail expressions of intimacy, affection, and nurturance. Many – not all, but many – of the women I lived with who were deeply invested in the intimate, sensual, compassionate practices of feeding, rarely said anything about sex. When it came to cooking and

eating, however, they had much to share.

The “social intercourse” (Sutton 2001; Weismantel 2001) which occurs in feeding and eating produces – and reproduces – relations of affinity that parallel, but are not subsumed by, the practices of sexual intercourse. It is telling that a synonym to the word *rica* – a Spanish way of describing food as delicious – is *fértil*, or fertile. Fertility, as understood by the women with whom I lived, was tied not only to the process of sexual reproduction, but also to the ways that they affected the bodies of others through their daily culinary activities. It was a custom after Carla had piled her guests’ plates high with beans, rice, cream, guacamole, salsa, cheese, and the main dish she had prepared, and after Miguel had said the prayer of grace, for the family to make a welcome speech, in which they emphasized to those at the table: “You are a part of our family.” There was no analogy or metaphor at work— guests in this moment were not *like* or *similar to* family. In other words, there was no sense of “fictive kinship” in this household— a term with roots in biological determinism, which positions some kinship to be true, but others as mere fiction. Kinship was kinship; eating together created it and the food prepared by Mama Carla was the foundation for the formation of these relationships (see also Carsten 1997).

Yet much of this was called into question with her diagnosis of diabetes. The nagging presence of her own illness coupled with concern about her daughter’s pre-diabetic diagnosis took away the certainty she had about the aptitude of her labor. The ambiguity that she felt about what was happening within her body affected her long-held belief in the importance of the pleasures of taste, satiety, and satisfaction. “In an instant” – to use her words – diabetes recast experiences she had long believed to be of value as potentially harmful. The logic of nutritional epigenetics accompanying diabetes also replaced the value of producing relationships through meals with the value of long-term reproductive health. With this diagnosis, a range of new

reproductive technologies entered the realm of culinary values in which Mama Carla was raised. As these technologies became increasingly abundant in her life, her primary domain of knowledge and expertise became obfuscated, and her role in her family and community became transformed.

New Reproductive Technologies and Epigenetics

With discourses of metabolic health requiring the introduction of new technologies for cooking and feeding, the traditional pathways for women's reproduction of kin have been radically reordered. These technologies situate dietary well being not through tastes and intimacies, but through quantitative measures such as weight, blood sugar, caloric energy, centimeters of abdominal fat, and grams of carbohydrates or proteins. Such technologies also operate through calculations unfamiliar to women— often their young daughters know more about how to use these metrics than they do. In Mama Carla's case, she was learning to use the tape measure from her sewing kit to obtain the centimeter size of her abdominal fat and arm circumference, and to then compare these numbers against population norms that purported to tell her if her body was healthy. In the market, children standing next to scales would read her weight; back at home, we used my computer's calculator to determine her BMI, and to find out where she was situated with respect to an international norm. At her doctor's office, there were the sphygmomanometer and stethoscope for blood pressure, and a blood sugar machine that would take a pinprick of blood to reveal her glucose levels in only a few minutes. Her doctor would send her to a separate laboratory to give a blood sample that produced numbers representing levels of cholesterol and triglycerides.

And then there was a range of technologies derived from equipment in far-away laboratories: the calorie, the serving size or portion, the recommended daily allowance of

vitamins, minerals, fats, and carbohydrates. Carla had learned to cook by relying upon skills developed through relationships with her grandmother, her mother, her aunts, and other kin. In contrast, these new technologies depended not on women's existing training and skills, but on numbers, norms, mathematical averages and fixed quantities. At the same time, these technologies also recast women's own bodies as vulnerable, and in need of external oversight and vigilant maintenance. The local paper, *El Quetzalteco*, regularly ran articles connecting the perils of obesity with new scientific and technological interventions. For example, an article on polycystic ovary disease warned that fat in the diet could "alter the ovaries," and included the following three pieces of advice, each illustrated by a picture: 1) "control your weight" was accompanied by an apple wrapped with a measuring tape; 2) "consult a doctor" was accompanied by a doctor in a white lab coat with a stethoscope and clipboard; and 3) "do exercise" was accompanied by a tall, thin woman exercising on an indoor rowing machine.

These mathematical formulas, tables of standards and cut-off points, and averaged dietary requirements are replacing women's knowledge about the indeterminate modalities of the senses and undercutting the expertise they have about their own bodies. Illness for women in Xela was once linked to a feeling of sickness; the health spoken of today, however, often does not refer to a sensation felt within the body, but a calculated probability. No longer conceived in opposition to the feeling of disease (ie. pain, nausea, exhaustion), health is seen as a variable to be maximized, demanding both the prevention of future illness as well as the possibility of future prosperity resulting from increased work potential. The presence of illness is thus no longer contingent upon one's awareness of their own body, but upon a doctor's interpretations and lab results— sources outside one's body or self. Pain, nausea, and fatigue are certainly present in many metabolic illnesses, but this class of illness is also unusual because, in one doctor's words:

“you can be sick, without feeling sick.” Heart disease, for example, is often described as a “silent killer,” hidden in a body that does not feel its dormant presence. An article in the health section of the local newspaper showed a photograph of a woman in indigenous dress, her arm extended toward a woman wearing a white uniform, who was taking her blood pressure. The caption read: “People must be evaluated constantly, in order to know the state of their health and to best care for themselves.”

What is significant here is that at the precise moment when women’s embodied knowledge is being called into question and their culinary expertise undercut by new reproductive technologies, discourses of epigenetics have raised the stakes of culinary reproduction. A major longitudinal study carried out in Guatemala by the Institute of Nutrition of Central American and Panama (INCAP), which began in the sixties and is ongoing through follow-up studies today, has helped to lay the groundwork for the idea that “food conditions early in life, in utero or early postnatal life, affect patterns of gene expression and thus the way the body works for a lifetime, and perhaps beyond” (Landecker 2010:21). While people I worked with in Xela were largely unfamiliar with the scientific technicalities of epigenetics – that is, the idea that food “provides a molecular signal that may last over generations” and “shapes the conditions of its own reception in the future” (Landecker 2010:21) – Guatemalan media sources have been quick to translate the implications of this research into everyday warnings about the responsibilities of motherhood. The *Prensa Libre* – with one of the largest circulations in the country – was filled with headlines such as “Prevention of Obesity begins during Pregnancy” (*Prevención de la obesidad comienza desde el embarazo*), or “The Mother’s Obesity or Excess Weight influences the Weight of her Children” (*La obesidad o sobrepeso de la madre influye en el peso de sus hijos*), or “Get Exercise, Mom!” (*¡Haz ejercicio, mamá!*).

Such messages replace traditional connections between women's role in nourishing their families with discourses about the importance of making individual food choices. Focus is thus shifted from the social embeddedness of cooking and feeding and women's role in producing intimacy and cementing relationships to how one's practices of dietary health will impact the future. At one of the health centers I visited an employee had taped up a newspaper article with the headline, "Nutrition for the Future." "There is an abundance of excuses for eating poorly," the article began. "But," it went on to suggest, "there is one good reason for caring for nutrition: the quality of life in the future, when you pay for what you did (or didn't do) in your youth." When counseling patients about dieting, local nutritionists would often tell them that dietary changes would yield a future payback. "It might seem expensive, but imagine the long term savings," or "It costs more but it's worth it," were common statements used to promote certain foods over others. This future orientation or focus on "potentiality" is increasingly understood through the metrics of alternative reproductive technologies. Potentiality is both determined through a numeric scale (BMI, for example), and transformed into indices that aim to predicatively measure future possibilities in terms of "human capital," defined as "increased height and fat-free mass, increased work capacity, and improved intellectual performance." INCAP reported that its "longitudinal study demonstrates that nutritional intervention in the first months of life can change the situation of poor or extremely poor households, generation after generation. Physical growth and mental development depend on a complete diet during the first years of life" (Marroquín Cabrera 2009). The explanation that human capital would be expanded with proper nutrition made its way into local news, and consequently into the lives of the women I spent time with in this way: "Invest in human child capital" (*Hay que invertir en capital humano infantil*). "Good nutritional health has changed lives," was the title of a special issue of

the Sunday *Prensa Libre* from April, 2009.

The findings of the INCAP study not only resulted in injunctions to force women to eat better and focus on the future consequences of their dietary choices and behaviors but also shaped national food policies. Following INCAP's early reports that gestation and the first three years of life marked a critical window on later health outcomes, the Guatemalan national government began a concerted effort to direct attention toward the nutrition of pregnant and lactating women, and toward children under the age of three. Today, government-funded health outreach programs are charged with delivering the supplement *Vitacereal* to rural communities. *Vitacereal* is a vitamin-fortified maize developed by the World Food Program, manufactured in Guatemala, and delivered to outreach programs in bulk via boxes marked "from Spain." A program I worked with gave every pregnant or lactating woman in the communities it served three bags of *Vitacereal* each month, as well as three bags for each child under three years of age. The bags were delivered with a "cooking class" (*clase de cocina*), showing women how to add boiling, purified water to dissolve the powdered formula, which educators explained held concentrated proteins, fats, and carbohydrates, as well as vitamins and minerals that would make them healthy. In the months of classes I sat in on, the main comment the educators offered about taste was to clarify that it didn't "taste bad." These health programs also monitored women and children their monthly "measurements" (*medidas*), which were linked to a range of outcomes correlated with traditional understandings of health (i.e. lifespan and incidence of disease). But the educators also linked food and body measurements to future intellectual functioning, school achievement, work capacity, and income and wealth (Ramirez-Zea, et al. 2010:399). In contrast to those working in urban centers, few people treated were determined to be *overweight*, and we rarely treated someone diagnosed with diabetes, hypertension, etc. But health educators had

learned that rural malnutrition could contribute to the onset of metabolic illnesses later in life, and would emphasize making “healthy” food choices. In both urban and rural nutrition classes, educators would say: “You need to eat a variety of foods or your family will get sick.” On several occasions I heard educators make the promise: “If *you* eat well, your family will be healthy.”

These food policies, injunctions, and the barrage of probability calculations that predict future outcomes which confront Xela women today do not simply direct women’s attention toward the future, but cultivate a new awareness of the self as situated in a linear and progressive temporality. This is a highly gendered self, but it one disengaged from prior networks of female kin through which embodied practices of shopping, cooking, and caretaking were kinesthetically learned. It is telling that INCAP’s scientists summarized the results of the longitudinal study as follows: “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” (Martorell, et al. 1995:1034S, italics mine). This potentiality is increasingly understood through the metrics of alternative reproductive technologies dependent upon quantitative abstractions and not the immediate pleasures of eating. As a result, at the moment in which nutritional epigenetics presents women with heightened responsibility for the future health of their kin, so too does it undermine their existing culinary knowledge and skills.

Bodily Betrayal

In this chapter I have suggested that the anger Mama Carla spoke of is linked to the challenge that diabetes presented to her reproductive potential, in its broadest sense. What the diagnosis of a metabolic illness took from women whose lives centered on their kitchens was more than physical; it took away their sense of culinary expertise and consequently their feeling

of security about their place within their families and communities. When women learned that their well-being, and that of their kin, had been compromised by the food they prepared, it called into question both their ability to care for those around them and their capacity for reproduction in a most literal sense: it was through food and feeding that they actively and continuously formed the bodies of others. Moreover, at the same time that their role in their families was undermined, a discourse of epigenetics heightened the toll of this “infertility,” threatening consequences that would be born by their kin, generation upon generation. While illness and the marginalization of women is nothing new to Guatemala, metabolic illnesses have placed new burdens on women, and women themselves see their bodies as embodying a particularly modern form of violence. This violence destabilizes their expertise in a key domain of their authority – cooking and feeding – while also taking place, not only in the global processes happening around them, but within their own bodies and the bodies of those they love and nurture.

In one sense, epigenetic theories have potential for facilitating public recognition about something anthropologists have seen for decades: bodies, and the cultural technologies and artifacts around which they coalesce, are not just individually performed, but are built up over time in individuals, families, and communities. But epigenetics as it is popularly understood in Guatemala (and elsewhere) focuses not upon the social world, but on the bodies and choices of individual women, and the hostile or benign forces that enter the body from an external environment. It is coupled with metrics of (human) capital that overlay a series of calculations and quantitative standards upon dietary practice in a way that is unable to assess the knowledge held by women like Mama Carla in terms that are meaningful to them. It also comes with a promise: “If you eat well, your family will be healthy.” While this appears to be straight-forward advice, perhaps even well-intentioned, it saddles people – overwhelmingly women – with the

impossible responsibility for preventing dietary illnesses in themselves and in others. It ignores that bodies can betray us.

Biological reproduction was once primarily associated with marriage and sex – and thought to occur over the duration of insemination and gestation. Today, following the logic of global discourses about nutritional epigenetics, the biological reproduction in which women are engaged happens every day over *los tres tiempos* (the three main meals of the day), seven days a week, with no end in sight. In every act of eating, and every act of feeding, women participate in a negotiation in which their lineage is at stake; given that the threat of metabolic illness looms large before them, the stakes of this negotiation are high. Not only do the new technologies accompanying metabolic illnesses affect the kinship systems in which women are embedded, but by linking food consumption, long-term health, and reproductive potential, the very notion of kinship – and the pathways of its reproduction – is transformed. While existing anthropological analyses of ARTs have effectively conflated biological and social reproduction, contemporary global discourses of epigenetics require that we now extend our understanding of “reproductive technologies” to encompass the culinary, dietary, and dieting practices in which women and men participate. This, in turn, requires that we return to kinship studies with renewed interest in the socio-material construction of a form of heredity that is “actively and continuously” made in the body.

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References Cited

Asfaw, Abay

2009 Does Consumption of Processed Foods Explain Disparities in the Body Weight of Individuals? The Case of Guatemala. *Health Economics* Dec 22: <http://onlinelibrary.wiley.com/doi/10.1002/hec.1579/pdf>.

Caballero, Benjamin, and Barry M. Popkin

2002 *The Nutrition Transition: Diet and Disease in the Developing World*. Boston: Academic Press.

Carsten, Janet

1997 *The Heat of the Hearth: the Process of Kinship in a Malay Fishing Community*. New York: Oxford University Press.

Collier, Jane, and Sylvia Yanagisako

1987 Introduction. *In Gender and Kinship: Essays Toward a Unified Analysis*. Pp. 1-13. Stanford: Stanford University Press.

Edholm, Felicity, Olivia Harris, and Kate Young

1978 Conceptualising Women. *Critique of Anthropology* 3(9-10):101-130.

Franklin, Sarah, and Celia Roberts

2006 *Born and Made: an Ethnography of Preimplantation Genetic Diagnosis*. Princeton: Princeton University Press.

Goody, Jack

1982 *Cooking, Cuisine, and Class: a Study in Comparative Sociology*. New York: Cambridge University Press.

Groeneveld, Iris F., Noel W. Solomons, and Colleen M. Doak

2007 Nutritional Status of Urban Schoolchildren of High and Low Socioeconomic Status in Quetzaltenango, Guatemala *Pan American Journal of Public Health* 22(3):169-77.

Hawkes, Corinna , and Anne Marie Thow

- 2008 Implications of the Central America-Dominican Republic-Free Trade Agreement for the nutrition transition in Central America. *Rev Panam Salud Publica/Pan Am J Public Health* 24(5):345-360.
- Inhorn, Marcia C., and Daphna Birenbaum-Carmeli
- 2008 Assisted Reproductive Technologies and Culture Change. *Annual Review of Anthropology* 37(1):177-196.
- Landecker, Hannah
- 2010 Food as Exposure: Nutritional Epigenetics and the Molecular Politics of Eating. *In* CSW Update Newsletter: UCLA, <http://escholarship.org/uc/item/6j50v781>.
- Marroquín Cabrera, Marcela
- 2009 Una Buena Nutrición Les Cambió La Vida. *In* Prensa Libre. Pp. 2-3. Guatemala City.
- Martorell, Reynaldo, Jean-Pierre Habicht, and Juan A. Rivera
- 1995 History and Design of the INCAP Longitudinal Study (1969-77) and its Follow-Up (1988-89). *J. Nutr.* 125(4_Suppl):1027S-1041.
- Meigs, Anna S.
- 1984 *Food, Sex, and Pollution : a New Guinea Religion*. New Brunswick, N.J.: Rutgers University Press.
- Parkin, Katherine J.
- 2006 *Food is Love: Food Advertising and Gender Roles in Modern America*. Philadelphia: University of Pennsylvania Press.
- Paul, Lois
- 1974 The Mastery of Work and the Mystery of Sex in a Guatemalan Village. *In* *Woman, Culture, and Society*. M.Z. Rosaldo, L. Lamphere, and J. Bamberger, eds. Pp. 281-299. Stanford: Stanford University Press.
- Peletz, Michael G.

- 1995 Kinship Studies in Late Twentieth-Century Anthropology. *Annual Review of Anthropology* 24(1):343-372.
- Popenoe, Rebecca
- 2004 *Feeding Desire: Fatness, Beauty, and Sexuality Among a Saharan People*. New York: Routledge.
- Ramirez-Zea, Manuel, Paul Melgar, and Juan A. Rivera
- 2010 INCAP Oriente Longitudinal Study: 40 Years of History and Legacy. *Journal of Nutrition* 140(2):397-401.
- Rapp, Rayna
- 1978 Editorial: The Search for Origins: Unraveling the Threads of Gender Hierarchy. *Critique of Anthropology* 3(9-10):3-24.
- Rubin, Gayle
- 1975 The Traffic in Women: Notes on the 'Political Economy' of Sex. *In* *Toward an Anthropology of Women*. R.R. Reiter, ed. Pp. 157-210. New York: Monthly Review Press.
- Schneider, David Murray
- 1968 *American Kinship: a Cultural Account*. Englewood Cliffs, N.J.,: Prentice-Hall.
- Smith, Carol A.
- 1995 Race-Class-Gender Ideology in Guatemala: Modern and Anti-Modern Forms. *Comparative Studies in Society and History* 37(4):723-749.
- Strathern, Marilyn
- 1992 *Reproducing the Future : Essays on Anthropology, Kinship, and the New Reproductive Technologies*. New York: Routledge.
- Sutton, David E.
- 2001 *Remembrance of Repasts: an Anthropology of Food and Memory*. New York: Berg.
- Thompson, Charis

2005 *Making Parents: the Ontological Choreography of Reproductive Technologies*. Cambridge: MIT Press.

Weismantel, Mary J.

2001 *Cholas and Pishtacos: Stories of Race and Sex in the Andes*. Chicago: University of Chicago Press.

Williams, Raymond

1982 *The Sociology of Culture*. New York: Schocken Books.

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ⁱⁱ It is revealing that the word used in Guatemala to describe a strong craving for food (one dissociated from a perceived physiological hunger) – *ansiedad* – is also used to describe the anxiety associated with a stressful life. As such, to experience *ansiedad* means both to lose control of appetite and to feel anxious.