Science and the Starving Subject: How science and biomedicine have portrayed, sustained, and (re)produced malnutrition in Africa

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Hunger remains prevalent across Sub-Saharan Africa; however, hunger in Africa is also disproportionately prevalent in media images and charity campaigns. How have the discourses and depictions of hunger in Africa been created historically? Scientific research is one major producer of knowledge about hunger in Africa. In particular, hunger has been scientized into its medically operationalized term malnutrition. Employing critical discourse analysis of 20th century scientific literature on severe malnutrition, particularly kwashiorkor, this thesis aims to determine: 1) how Africans have been represented—and stereotypes (re)produced—within scientific discourse on hunger, and 2) how the history of medicalization of hunger has affected the framing, study, and response to hunger. I argue that scientific discourse has contributed to image of Africa as a “starving continent” and has produced problematic representations of Africans. Scientific discourse has also influenced the response to hunger throughout the 20th century, including through technical interventions ranging from food-based solutions to agricultural biotechnology. I argue that the continued research on malnutrition and privileging of technical solutions has distracted from a political discussion of the underlying poverty and global inequalities that ultimately cause malnutrition. Scientific research on malnutrition needs to be more politically aware of how its discourse can affect representations of hunger (and the hungry) as well as its perpetuation.
“Most problems have at least two kinds of history. The first is a narrative of the object of study and the second is the history of scientific thinking about the problem. This second history is determined not by ‘nature’ but by the ways we think about and act upon ‘disease’. These two histories are connected and it is often the paradigm operating at the second scientific level which will determine what goes into the narrative space of the first.” –McDermott (1998)

In September 2000, members from 189 nations met at the United Nations Millennium Summit and made a pledge to eradicate extreme poverty and deprivation. To achieve this end, they outlined the eight most pressing global issues that need to be addressed. Termed the Millennium Development Goals (MDGs), these eight objectives were given specific time-bound targets with a deadline of 2015. The first goal includes the eradication of hunger; specifically, it seeks to halve, between 1990 and 2015, the proportion of people who suffer from hunger. This goal emphasizes the tremendous extent of global hunger—in 2009 there were over one billion people suffering from chronic hunger, or over 14% of the world population. Almost one quarter of children under five years of age in developing nations are underweight, although this varies greatly by region—ranging from 4% in Latin America and the Caribbean to 38% in Southern Asia (2009 UN MDG statistics). Since 1990, there has been slim progress in reducing global

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hunger; despite two decades of effort, the actual number of chronically hungry people has increased across the globe (despite a reduction in percentage).

The statistics on global hunger are striking. The issue has prompted worldwide attention in the past few decades. Although the term global hunger is frequently used, acute and chronic hunger on the global scale almost exclusively exists in the Third World. Nevertheless, the existence of Third World hunger does not remain under-the-radar in the West, in part because images of hunger, famine, and starving children are prolific in the media and in charity advertisements. One region has been disproportionately represented in media portrayals of global hunger: Africa. The image of a young African child with a swollen belly is almost iconic, as are the numerous images of starving African mothers and children that flash across news screens during famines—like the infamous image of a skeletal child bent over with a vulture in the background. Headlines of African food crises or famines seem to be ubiquitous and the phrase: “Finish your plate, there are children starving in Africa” is commonplace in the U.S. It is often cited that in this century, the percentage of the global population facing acute and chronic hunger is decreasing on every continent except Africa and that “Sub-Saharan Africa is the only region of the world in which chronic food insecurity and threats of famine remain endemic for most of the population” (Baro and Deubel 2006:522). However, as noted above, hunger does not only exist in Africa, nor is that where hunger is necessarily most common. In fact, prevalence of childhood undernutrition is much higher in Southern Asia with 38% of children under five underweight, compared to 22% in Sub-Saharan Africa. Even so, the commonplace phrase noted above does

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2 From 16% to 13% undernourished across the globe and 30% to 23% in underweight under-fives in developing regions (UN MDG data from 2009).
3 Diana Wylie in her book *Starving on a Full Stomach* (2001) also mentions that (unsurprisingly) writing on food in Africa has been primarily concerned with famine.
4 On the other hand, the percentage of the population that is undernourished (below minimum level of daily energy level requirements) is highest in sub-Saharan Africa—26% —followed by Southern Asia—21% (based on 2005-2007 data).
not read “Finish your place, there are children starving in India.” Above and beyond the reality of enduring hunger in Africa, the association of hunger with Africa remains particularly ingrained in Western portrayals of the continent.

The unyielding depiction of hunger in Africa prompts the question: why is hunger so strongly associated with Africa and how has this association been created historically? Media portrayals of Africa, as well as media-based humanitarian campaigns—like Live Aid and Live 8—are clearly influential. In “Humiliated once more,” Madeleine Bunting (2005) makes the argument that present-day depictions of Africa have only led to an increase in the apparent powerlessness of Africa on the world stage. She suggests that the media represents Africa in a negative light and focuses on the poverty, malnutrition, and violence, which perpetuates the 19th century imagery of Africa as a dark continent. News photographs and media clips reproduce and reinforce associations of hunger and Africa, however, they do not produce these associations in a socio-historical vacuum; rather, they draw on existing discourses of African hunger. Where do these fundamental discourses on African hunger come from?

One significant source of knowledge about African hunger throughout the past century has been scientific research. Nutritional scientists, agricultural scientists, biomedical researchers, physicians, and scientifically-oriented aid organizations have all produced discourses about hunger in Africa, and in the process, these scientific discourses have (re)produced representations of Africa and Africans. Drawing on an interest in science studies and social history of medicine, the impetus for this project began with this fundamental, guiding question:

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how have science and biomedicine played a role in creating and sustaining the association of hunger with Africa? To be clear, although I generally use the term “Africa,” I will focus almost exclusively on the region of Sub-Saharan Africa. But before addressing questions of the complicity of scientific research and literature in producing and representing hunger in Africa, some definitions and clarifications are needed.

**What are hunger and malnutrition?**

Hunger refers to the want or scarcity of food (on an individual, community, national, or global level) and is a condition that has occurred alongside human civilization throughout history. It can be chronic, seasonal, or acute and has long been considered a social and ecological phenomenon caused by inadequate production and/or distribution of food within society. Production of food can be disrupted by climate conditions, conflict, or other causes of ecological vulnerability, and distributional failures can be caused by conflict, structural inequalities, insufficient reallocation, or political turmoil. Even as hunger is individually embodied and experienced, it is deeply socially embedded, constructed, and suffered.

There is also a technical, medically operationalized term for hunger—malnutrition. Malnutrition, the medicalization of hunger, is a classification that emerged from the rise of biomedicine and nutritional science beginning in the 19th century. Along with this medicalization has come classification of malnutrition into different forms. Generally, malnutrition means a lack of some or all nutritional elements necessary for human health. There are two basic types: micronutrient malnutrition (caused by the deficiency of vitamins and/or minerals) and protein-energy malnutrition (PEM) (caused by the lack of protein and/or calories). There are numerous

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7 There is also a classification of overnutrition characterized by excess intake which we will not discuss. There is a growing literature on the double burden of under- and overnutrition in some developing world regions. For a discussion of rural South Africa see: Kimani-Murage EW, Kahn K, Pettifor JM, et al. 2010. The prevalence of stunting, overweight and obesity, and metabolic disease risk in rural South African children. *BMC Public Health* 10:158.
classifications of micronutrient malnutrition which cause diseases ranging from rickets to scurvy. Most, if not all, of this type of malnutrition can be prevented and treated with vitamin/mineral supplements. Knowledge of the role of vitamins and minerals in disease has prompted widespread interest in food fortification and supplements, and as a consequence the world has witnessed a tremendous reduction in the prevalence of these “deficiency” diseases in areas where supplements and fortification are available. In populations that lack access to these prevention measures, prevalence rates of iron deficiency anemia, zinc deficiency, and vitamin A deficiency can be extraordinarily high (Caulfield et al. 2006). On the other hand, protein-energy malnutrition (also called severe malnutrition and generally referring to childhood malnutrition) is caused by lack of macronutrients, either protein or carbohydrates (also considered a lack of overall calories). PEM has been further classified into a spectrum of nutritional syndromes ranging from marasmus—wasting caused by lack of calories—to kwashiorkor—edematous malnutrition caused by lack of protein—and including marasmic kwashiorkor as an intermediary.

A focus on severe malnutrition (PEM)

Although the burdens of micronutrient malnutrition and PEM are both significant in Africa (and throughout the developing world), I focus on PEM for two main reasons. First, while micronutrient malnutrition is widespread throughout the world and therefore its geography is not particularly significant, the history of PEM is deeply intertwined with the tropical world, especially Africa. Second, PEM calls into question more complex underlying causes of

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8 South Asia has the highest percentage of children (birth to 4 years) with iron deficiency anemia, vitamin A deficiency and zinc deficiency with 76%, 40%, and 79% respectively. Africa is the next highest region for most with 60%, 32%, and 50% respectively. In comparison, in high income countries (where this adequate access to both food and supplements) rates are 7%, 0%, and 5% respectively (Caulfield et al. 2006).

9 The etiology of kwashiorkor is still highly debated (as we will see), however, protein deficiency is the most commonly used definition.
malnutrition because of an overall lack of food rather than specific nutrient deficiencies. While PEM can also lead to micronutrient malnutrition, it has much broader social, economic, and political origins that are dismissed when researchers explain the causes and solution to PEM in technical terms.¹⁰

The classification and etiology of PEM is fraught with controversy and has been defined and redefined throughout history. The biomedical classification system is critical to the ordering and organizing of disease, however, this classification system also harbors important political and social power. In labeling, excluding, simplifying, diagnosing, and ordering, classifications direct attention to certain diseases over others and shape the selection of interventions. The very process of classification gives specific institutions and individuals (such as scientific researchers) significant political and social power. Finally, classifications are also dynamic over time. The historical shifts in PEM classification have had significant effects on how hunger and malnutrition, more broadly, are addressed politically, medically, and socially.

The history of kwashiorkor research is epistemologically and socio-politically rich. As an emblem of childhood malnutrition, it prompted massive interest in severe malnutrition across the globe and influenced the trajectory of scientific inquiry into malnutrition. Because of its severity and acute onset during times of famine, kwashiorkor has a close historical relationship with practices of humanitarian aid. Its discovery came after the identification of “deficiency diseases” and triggered a renewed examination of the underlying causes of hunger. This did not happen quickly, without debate, or in a political vacuum, and the history of the development of social

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¹⁰ Importantly, there has been a recent move in global health to focus on “hidden hunger” (micronutrient malnutrition) over hunger. This is especially important with regard to the idea of technical fixes. As Kimura explains “Recently, there has been a broad shift in the discourse of the Third World food problem from food quantity to food quality, from hunger to ‘hidden hunger,’ and from famine to micronutrient deficiencies. In this new framing, Third World countries might have enough food, but they do not have ‘quality’ food” (Kimura 2008:232).
medicine (including the acknowledgement of social determinants of health, such as socioeconomic status) can be seen throughout the scientific discourse on kwashiorkor.

Furthermore, the history of kwashiorkor (and PEM more generally) is intimately intertwined with the history of colonial and post-colonial Africa. Kwashiorkor was “discovered” by researchers (publishing in Western medical journals) in 1933 in South Africa and was largely considered an African disease through the 1950s. It gained prominence as a medical entity in Africa at the time that colonialism was experiencing increased obstacles with regard to the devastating poverty and poor health conditions affecting Africans. The reasons why colonial researchers and officials took interest in African nutrition highlight the concerns over deteriorating African health and influence the frameworks through which malnutrition was portrayed in the scientific discourse. The discovery of kwashiorkor prompted interest in severe malnutrition throughout the world; however, there remains a strong association between severe malnutrition (especially kwashiorkor) and Africa.

While the social (and medical) construction of hunger in Africa is a central point of inquiry in this thesis, it is also important to remain cognizant of the materiality of malnutrition. Hunger and Africa are not only associated in the media and in the minds of people in Western nations, hunger remains a devastating and widespread burden in Africa to this day. Moreover, kwashiorkor (and research on kwashiorkor) is not a thing of the past. Prevalence rates of kwashiorkor are scarce; however, a 2008 article cites rates in Malawi as high as 2.5%, making it arguably the most common type of severe childhood malnutrition in that region. Because of the enduring prevalence of kwashiorkor (and hunger in general) in Africa, the goal of this thesis is not only to elucidate how scientific discourse represents and theorizes malnutrition, but also to

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elaborate on how the process of scientific inquiry has affected the reality of hunger in Sub-Saharan Africa.

**Medicalization and its significance**

Over the course of the past century there has been a shift away from understanding malnutrition as a socially produced condition to that of a biochemical pathology. The overarching aim of this thesis is to elucidate the processes and consequences of this medicalization of malnutrition in Africa. Malnutrition, unlike hunger, is a medical term with scientific causes, pathologies, treatments, and prevention strategies. Moreover, the act of framing hunger in scientific discourse (also referred to as scientization) narrows research into etiology, classification, and treatment, and as such, removes hunger from its social, political, and economic context and places it within the laboratory, the clinic, and the scientific journal. This not only depoliticizes hunger so that the underlying causes are overlooked, but it thereby reinforces the very structural inequalities that are the fundamental cause, with significant historical and political consequences.

Furthermore, medicalization and scientific inquiry not only affects the actuality of malnutrition; it also (re)produces representations of hunger and Africa in the literature. Biomedicine makes claims to autonomy by resting on the notion that it is an objective and beneficial institution with a scientific identity (Rosenberg 1979:2); however as this thesis will show, science has a history and harbors significant social and political power, while

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12 Here I distinguish between scientization and medicalization (or biomedicalization). At times I use these terms and concepts interchangeably, but they also have certain distinct meanings. By scientization I mean the incorporation of hunger into the discourse of science which rationalizes hunger as a consequence of scientific problems—such as insufficient food production—and as ameliorable to technical solutions. In this case, technical means that which is subject to consideration by a “qualified expert.” Medicalization of hunger as malnutrition fits into the overall scientization of hunger described above but focuses more specifically on the role of the biomedical community and its discourse which turns hunger into not just a scientific problem, but a medically operationalized syndrome. This relates to the distinction of biomedicine from science, in which biomedicine has a scientific identity and is part of the scientific community and its discourse, but it also has unique attributes and considerations due to its position as medical institution.
biomedicine—as a more humane form of science—is even more socially and politically embedded in society. As George Rosen, the father of social history of medicine emphasized, the line between social ideology and scientific inquiry is subtle and shifting; medicine mirrors social values and forms of economic and political power (cited in Rosenberg 1979:3). As such, scientific discourse is not an objective description of natural phenomena; it reflects, represents, and reinforces social norms, political motives, and individual prejudices. Biomedical research may remove the pathology of hunger to the laboratory, but with study of the pathology also comes the African as object of research. Along with this process, the study of African hunger has produced and reproduced representations of Africa and Africans. One of the main goals of this project is to investigate what these representations and frames have been and the processes by which they have remained entrenched in scientific discourse.

The central guiding questions of this thesis include:

1) How has the history of medicalization of hunger (as malnutrition) shaped the framing, discussion, study, and response to hunger in Africa, and globally?

2) How has scientific discourse on malnutrition over the past century contributed to the current association between hunger and Africa? That is, how have Africans been represented—and stereotypes (re)produced—within scientific discourse?

Beginning with the abstract question of—*what does medicalization do?*—there emerge a series of themes that will be followed throughout this paper. Firstly, medicalization privileges scientific knowledge, inquiry, and solutions; the corollary is that this process also de-emphasizes the political, social, and economic causes and consequences of hunger. This is what I call the

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13 Patricia Allen discusses the separation of the clinical and social definition of hunger in her article about hunger in the US. She says: “The 1994 President’s Task Force on Food Assistance included two definitions of hunger. One was clinical and related to nutritional deficiencies; the other was social, whereby hunger was defined as the inability to obtain sufficient food and nourishment” (2007: 22). The social definition has been lost over time leading up to the
Depoliticization of malnutrition. Depoliticization does not imply that science is apolitical or that hunger becomes apolitical; rather the scientific discourse of malnutrition privileges scientific debate rather than political debate. It privileges expert over local knowledge, formal over folk classifications, ahistorical over historically-situated knowledge, and ultimately reinforces existing power relations (and inequalities). It privileges research over action through the perpetual re-problematization necessary for creating and maintaining biomedical classifications. It also privileges technical, proximate causes like protein deficiency and agricultural inefficiency over structural, fundamental socio-political forces like poverty and inequality. Finally, it privileges technical fixes (the technologization of hunger) and expert-run interventions over structural transformations and participatory action and reform.

Through an historical analysis of the scientific discourse on malnutrition, it becomes possible to see how biomedical theory and classification translate into practice. The discourse of hunger (as malnutrition) was not contained solely within the scientific literature; the discourse of malnutrition was used by colonial and government officials as a pretext for political, social, and economic issues and was used to promote their objectives. The political and social context in which researchers studied malnutrition likewise became incorporated into the scientific literature. Therefore, the process of medicalization affects the materiality of malnutrition in Africa and the response it elicits, as well as the representations of Africans framed through this “objective” expert discourse.

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removal of the word hunger from the USDA’s assessment of food security in 2006. As she explains it: “The violence of hunger is compounded by the violence of a science that claims hunger does not exist” (22). This highlights the depoliticization of hunger that medicalization creates and also shows how science and politics are interrelated in this process. See: Allen, Patricia. 2007. The Disappearance of Hunger in America. *Gastronomica: The Journal of Food and Culture* 7(3):19-23
Employing critical discourse analysis, I examined scientific discourse of malnutrition (in particular, that of kwashiorkor) in 20th century Africa to investigate how it has created and perpetuated an image of hunger in Africa, as well as the sociopolitical reality of malnutrition on the continent. Critical discourse analysis is a method of unpacking the underlying themes conveyed through discourses, especially as regards power and inequalities. In describing discourse in a Foucauldian sense, political scientist Jenny Edkins explains:

At a particular period of time, for a specific social group, there are rules that define the limits and forms of the sayable and the conservation, memory, reactivation, and appropriation of discourses. Certain things can be said in specific domains of discourse (scientific, literary, etc.), and certain things will be remembered and reiterated while others will be forgotten or repressed. Some things said in the past will be regarded as valid and not others, and these things will be reconstituted in different ways. Prescribed individuals and groups will have access to particular discourses, and relations of authority will be defined; there is a struggle for control of discourses. (Edkins 2000:68)

I use critical discourse analysis (historically-focused) with the aim of dissecting the language used by those in power—in this case the scientific community—and highlighting not only what is said, but who says it, how it is said, for what intent, how these discourses change overtime, how they reinforce power relations, and ultimately elucidate the ways in which discourse becomes practice. In their book Cutting Down Trees, Moore and Vaughan wish to focus on the construction of a scientific discourse over time in a small community in what was Northern Rhodesia. They explain: “to read representations as representations, one must displace them from their context, from the naturalized parameters of meaning through which they make sense, and to read against the grain of their intentions” (1994:xxiii). Building on their methods, I aim to treat accounts simultaneously as factual and constructed, with an eye to both the multiplicity of interpretations but also the relative powers of different interpretations (e.g. local, expert, government). Specifically, I analyze scientific discourse as it appears in biomedical, nutritional,
and agricultural primary literature, as well as in media sources, secondary historical sources, and literature reviews. These scientific and biomedical discourses have been created and recreated by scientists, physicians, public health officials, government officials, social scientists, journalists, and historians.

*Africa as an object of study*

This thesis is a historical study of malnutrition in Africa, yet I recognize that Africa as a study subject is problematic. Africa as a continent and Africans as a peoples have historically been lumped together by the West as objects of study and discussion. “Africa” in this sense has been given a generalized and stereotypical image produced and reinforced by the media, politics, and other Western institutions. This is problematic. For example, anthropology as a discipline has moved increasingly to local studies, breaking up the study of people within Africa by nation, ethnic group, and community. The result, however, is that anthropology no longer offers an analysis of Africa as a continent, while the media and other governments still discuss “Africa” as an entity (Ferguson 2006).

This thesis will focus on Africa as a whole, not to dismiss the individuality of nations and peoples within the continent, but because, as a critical discourse analysis, this study aims to unpack the scientific discourse surrounding Africa and nutrition over the past century. Even though many studies took place in particular nations in Africa, kwashiorkor has repeatedly been considered a tropical or even African disease. Part of this discourse itself is the lumping of all African peoples into one stereotyped Africa. The study of Africa in this case “…is a classic

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14 In *Global Shadows*, James Ferguson critiques the complete removal of the study of “Africa” from the discipline of anthropology. Anthropologists now focus solely on African societies rather than the abstract concept of “Africa,” however, this has created a detrimental separation of anthropology and the journalistic, economic, social and media discourses of Africa. Ferguson argues that even though “Africa” is an abstract notion, discourses have materiality, and if, globally, people associate “Africa” with images, history, metaphors, etc., then it is an important topic for anthropologists to study. Perceptions and discourse are not just reflections of reality but that they actually shape reality (Ferguson 2006).
Pragmatist turn—things perceived as real are real in their consequences” (Bowker and Star 2000:13). Rather than reinforcing this notion, this thesis aims to critique these discourses from the vantage point of the discourse itself, including its typical subject. It would be impossible to unpack how scientific discourse has created the idea of hunger in Africa and the “starving African” without acknowledging the existence of this generalized “Africa.” This being said, throughout this paper I strive to remain cognizant of the particulars of studies on different peoples within Africa and the particulars of the people in power themselves.

**Thesis structure**

The first chapter will set up a theoretical as well as historical foundation for the rest of the study, drawing heavily on the disciplines of social history of medicine and science and technology studies. It will lay out some of the frameworks for considering history as a topic of study and the benefits of taking a historical approach to the study of science. I will also introduce and elaborate on the association between biomedicine and imperialism in Africa. Many scholars, including Jean Comaroff, have claimed that the development of biomedicine (as we know it) co-emerged with the expansion of imperialism. Within this process Africans became objects of scientific study. Thus African history was likewise shaped by the development of biomedicine (Comaroff 1993). This chapter will also highlight the relationship between science and power, with a focus on classifications, science as a universal language, conflict between expert and local knowledge, and medicalization. Finally, I will also address the historical rise of nutrition science and specifically the relationship that the evolution of this discipline had with Africa.

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15 The study of native peoples, in addition to the study of African land and natural resources, contributed to the idea that Africa was a great laboratory. As Dubow explains, it became a laboratory for studying “theories as to the relation between white and coloured races” (Dubow 2006:213). For more on this see: Tilley, Helen. 2011. Africa as a Living Laboratory: Empire, Development, and the Problem of Scientific Knowledge, 1870-1950. Chicago: University of Chicago Press.
The second chapter will look at general themes that emerge from the scientific (mostly biomedical) discourse on malnutrition in Africa throughout the past century (with a focus on the turn of the 20th century through the 1960s). This includes the scientific representation of the nutritional history of Africa, including the evidence that exists regarding this history, and also how this history has been erased within the nutritional science literature. In addition, I will discuss the study of traditional diets within scientific discourse and the reasons for scientific interest in these “unscientific” diets. This section will specifically highlight the confrontation between local and expert knowledge that appears in the literature on malnutrition. I will then introduce a discussion of scientific frameworks of famine and how these theories and inquiries affect discourse on malnutrition. The next section will focus on a major impetus for interest in African nutrition—fear of race deterioration. This framework guided much of the interest in studying malnutrition, but also the ways in which African hunger was framed and who was blamed. Finally, I discuss the general consideration of socioeconomic factors in the production of malnutrition in Africa; in particular I assess the discrepancy between acknowledgment of socioeconomic causes of malnutrition and political conclusions drawn (or ignored) by researchers.

In the third chapter I turn to ecological perspectives on malnutrition. The ecological themes within the literature on malnutrition in Africa include scientific interest in food production, improvement of agricultural practices, and environmental degradation. The remainder of this section is spent discussing several land use “problems” identified by scientists.

The fourth chapter will focus on a discussion of technological interventions aimed at preventing and alleviating malnutrition. I will highlight several examples of implemented or proposed technical interventions, and will assess the promises, debates, and consequences of
these interventions. The interventions include both food-based strategies and agricultural technologies, both of which highlight the tendency to favor technical fixes. I will also examine food aid as a response to hunger in Africa, including the ways in which it depoliticizes hunger.

In the fifth chapter I will consider the history of biomedical literature of kwashiorkor from the 1930s to the present day, as emblematic of the scientization of severe malnutrition. As mentioned above, kwashiorkor has a particularly interesting and nuanced history that intertwines with the history of Africa, colonialism, scientific research on malnutrition, and public health (and aid) interventions. This section builds upon the general themes and frameworks discussed in chapters 2, 3 and 4, but focuses specifically on kwashiorkor and the role that this syndrome has had in influencing discourses of hunger, as well as representations of Africans.

Finally, in the conclusion, I will bring the chapters together in a discussion of how scientific discourse on malnutrition and kwashiorkor in Africa has been scientized, its solutions technologized, and the consequences of these approaches on the persistence of hunger, as well as representations of hunger, in Africa. I will also turn to the question of what this means for the response to hunger in Africa, especially the role of science and biomedicine. The approach to reducing hunger should utilize science and technology as tools, but the solution is ultimately a political one and needs to be framed within the overarching framework of food as a universal human right. Hunger needs to be repoliticized and the dialogue needs to include both experts and non-experts, particularly the hungry themselves.
“The incorporation of hunger into...the modern human sciences has...removed [it] from the realm of the ethical and political and brought [it] under the sway of experts and technologists of nutrition, food distribution, and development. Its position there, as an appropriate subject for expert knowledge, remains a political position, but one that can lay claim to a political neutrality because of the specific way that science is construed as ‘truth’ in modernity.” –Edkins (2000:1)

Before we can investigate the historical development of scientific and biomedical discourses on malnutrition in Africa, it is necessary to establish the relevant theoretical frameworks within which this study is situated. This chapter first explains the reasons for taking an historical approach in this study, what this approach entails, and how this perspective can deepen and complicate our understanding of the relationship between biomedicine and malnutrition in Africa. Second, I will introduce some of the key theorists and their writings about the relationship between science and society in the modern state, especially in regards to power. Within this section, I will briefly review the links that scholars have drawn between science, especially biomedicine, and imperialism. Finally, to introduce the historical study of malnutrition, I will outline a brief history of the rise of nutritional science and its colonial contexts.

A Historical Approach

In an analysis of the influence of scientific and biomedical discourse on hunger in Africa, it is critical to look at the history of scientific research on malnutrition in Africa, from the late
19th century to the present-day. To understand the ways in which scientific research affects the existence of malnutrition, as well as its representations in Africa today, we need to understand how these perspectives, trends, and discourses developed. Current scientific discourses are not distinct from the past; indeed, they are predicated on, and build upon, historical themes.

In order to take an informed historical approach, this chapter will elaborate on what history means, how it is practiced, and what role it plays in understanding malnutrition. Misconceptions about what history is and how it is studied affect the ability to recognize the production and reproduction of history (on paper, in minds, on bodies, and socially). In *Silencing the Past*, Michel-Rolph Trouillot explains that by studying history and labeling historians as researchers of the past, we assume a distinction between past and present. However, there is no such thing as a fixed past because it is both continuous and discontinuous with the present; therefore history cannot be studied as removed from the present. Trouillot explains: “the past does not exist independently of the present. Indeed, the past is only past because there is a present…The past—or, more accurately, pastness—is a position” (Trouillot 1995:15). Everything in the present is a product of the past and therefore we cannot look back on “the past” because we are, in a sense, the past; these positions in time are inseparable. To gain a deeper understanding of how the past lives in the present, Trouillot emphasizes the processes and conditions of producing history over history as product or locatable moment.

Moreover, histories do not just exist in the mind or on paper; the past indelibly leaves a mark on bodies. Social forces such as poverty and inequality become embodied as individual experience and the body serves as a record of these past experiences (Farmer 2005:30). Not only do we remember the past but we physically embody it. In *When Bodies Remember*, for example, Didier Fassin focuses on the way that AIDS is imprinted on bodies: literally as the disease itself,
but also socially, politically, economically. Likewise, the history of malnutrition inscribes itself on malnourished bodies metaphorically, socially, and politically. For severe malnutrition like kwashiorkor, the diseases themselves have long-term effects and so do famines remain legible long after they have past. In addition, as we will see, the focus on how bodies reflect history is especially important because of biomedicine’s focus on bodies (rather than people), and colonial interest in African bodies as a source of labor.

If history is a process (not a product) that is physically embodied (not abstract), it is also constructed (not discovered). Recorded history itself is never just found and written; rather, it is always to some degree produced by the writer’s point of view, and those written histories help shape the future. In imperial and colonial Africa especially, European and colonial historians advanced a history in accordance with their motives, interests, and underlying assumptions. These histories legitimized the colonization of the continent, proved white supremacy, and provided a historical basis for the classification of races. This may not always have been conscious, but in retrospect it is clear that the history of Africa was “discovered” in such a way as to justify and enable the continuation of imperialism. As Jean and John Comaroff eloquently explain in Of Revelation and Revolution,

…our objective is to understand a particular historical process: an encounter in which a self-elected group of Britons sought, methodically, to ‘make history’ for a people whom, they thought, lacked it; to induct those people into an order of activities and values; to impart form to an Africa seen as formless; to reduce the chaos of savage life to the rational structures and techniques that, for the Europeans, were both the vehicle and proof of their civilization. (Comaroff and Comaroff 1991:14)

The history of Africa was for a long time written by the imperialists in the literal sense, but their histories also helped to produce Africa’s history of imperialism; imperialism both produced and was reproduced by imperial history. Moreover, imperial explorers and missionaries have left
some of the only written accounts of nutrition and diet in pre-colonial Africa, in this sense they have largely written the African history of hunger, in addition to producing this history.

We must further complicate this relationship between imperialism and written history. Colonial history does not pertain exclusively to Africa, but rather involves both the colonies and the metropole and the circumstances and ideologies that developed within and between these localities. The history of Africa is explicitly global. It is important to remain cognizant of how the ideologies and social issues at the forefront in the European metropoles both influenced and were influenced by ideas and institutions in the colonies. For instance, Cooper and Stoler highlight how elite/bourgeois fears about the working class in France influenced conceptions and practices regarding race, classifications, and subjugation in the colonies (Cooper and Stoler 1997). As we will see, European conceptions of class in the metropole were also reflected through scientific knowledge about diet and nutrition. These ideas and practices were influentially incorporated into colonial rule. Likewise, practices and ideas in the colonies inevitably changed the metropoles, including their scientific understandings and endeavors.

The history of science has influenced both the development of science as it appears today and the societies in which it is practiced. These developments can be seen by uncovering “patterns of historical interaction between scientific ideas and institutions and the society in which they existed” (Rosenberg 1976:224). The history of science and biomedicine in Africa is critical to the contextualization of current and past scientific discourse; therefore, I will briefly introduce the historical intersections between imperialism and biomedicine in Africa. First, I lay out some of the major frameworks regarding the history of science and the relationship between science, power, and society.
Science, Modernity, and Power

Modernity as a distinctive way of life developed into its recognizable form during the late 18th and 19th centuries. Modernity is widely considered to depend upon a capitalist economy, the sovereign state, and a specific regime of truth—the scientific method. Science, as the prominent regime of truth, is critical to the organization, practices, and meaning of modern society. In an effort to define science, we will use Rosenberg’s definition from No Other Gods: “Science will be assumed to mean a number of different things: an accumulating body of knowledge and the techniques for acquiring it, a community with peculiar ideas and values, and the images and emotions which scientific knowledge and the figure of the scientist conjure up” (Rosenberg 1976:x). Science, though hard to define and pinpoint, pervades and shapes Western culture. In Max Weber’s description of the factors contributing to the rise of modern capitalism in the 19th century, a primary theme is rationalization (Collins 1980)—that particularly systematic, impersonal, specialized form that is also associated with the pursuit of science. These attributes of rationality, calculability, and objectivity have given science a claim to legitimate knowledge, validity, and truth—concepts previously ascribed to tradition or divine authority. Today, truth is that which scientific research can demonstrate. As we will later see in relation to hunger, once hunger is framed within the discourses of modernity, it becomes classified as a scientific problem with scientific (technical) solutions, while previously it was seen as a failure of social distribution or political formations. To understand how scientific discourses and practices “produce” hunger we must recognize the relationship between science and power.

Science is ascribed significant power culturally, socially, and politically. Scientific thinking and rationality pervade Western culture and some have likened it to a religion because of the belief and faith placed in science, which is beyond anyone’s full comprehension (Fuller
Charles E. Rosenberg compares the two because: “Science, like religion, offered an ideal of selflessness, of truth, of the possibility of spiritual dedication. Emotions which would inspire and motivate, could legitimate the needs of particular individuals to achieve and control” (Rosenberg 1976:3). There is such a strong faith in science that often scientists are considered to “know best”; but even the scientists are blind to the true nature of science, as Fuller explains. Science is bigger than scientists and is not restricted to the time in which the rest of the world functions—science is considered autonomous and supra-generational. It is this gravity of science, in addition to the attribution of objectivity and rationality from Enlightenment ideology that contribute to science’s power. Objectively became the standard of truth because of its façade of “pure” or unbiased knowledge, that is, without human—social, cultural, political—preconceptions. However, not only is science afforded power through its veneer of objectivity; science is intimately intertwined with institutions of power, including politics and government. In fact, it has been said that “Apolitical knowledge does not exist” (Kimura 2008:238). In addition, science holds great power socially because scientific inquiry is both reflective of and reflected in social ideology (Rosenberg 1979:3).

Although scientific results are presented as objective and neutral facts, the framing of scientific questions and results always have social, cultural, and historical contexts, thereby embedding power in the process of scientific inquiry. Science as an academic exercise is built upon words, theories, and conceptualizations and as Trouillot explains: “what ties those words together is always a specific moment in the historical process. In short, conceptualizations are always historically situated” (Trouillot 2003:98). In addition, as a socially embedded institution, science does not work as a separate entity from, but rather alongside other institutions, such as those of the state. For example, as we will later see, the first institution to take interest in
nutrition in South Africa was the mining industry (Fox 1963). The mining industry was concerned about the physical deterioration of the migrant laborers they depended on and became the first major producer of nutritional knowledge in Africa. The reasons why the mining industry took interest in African nutrition and the complicity of industry in producing malnutrition in the first place (to ensure sufficiently fit laborers) are hidden in the objective language of scientific literature which focused on biochemical pathways and nutrients.

While scientists seek answers to questions in an academic, theoretical sense, they often do not concern themselves with concrete solutions to societal problems because, at its most basic level, science is a process of inquiry and testing en route to knowledge, and aspires to objective truth, uncontaminated by the social. However, societies have limited resources; as such, scientific research is dependent on funds that are ultimately diverted away from other institutions that are the providers of interventions and pragmatic action. In this way (among others), as Foucault states: “Theory does not express, translate or serve to apply practice: it is practice” (Foucault 1977b:208). We will also see below how theory becomes practice through classification and definitions; however before classifications are even created, theorizing is a practice which coexists—and competes—with other societal practices. Societal productions, like malnutrition, are problematized in a scientific sense and the practice of research itself is, as Fassin explains, “perpetual re-problematizing rather than a search for solutions” (Fassin 2007:xxi). This problematization by science is part of the process that I refer to as scientization.16

16 Foucault introduced the concept of “problematization” in the 1980s. He uses the term as such: In response to a perceived societal issue, one detaches oneself from the issue and makes it into an object that can be reflected on as a “problem.” Problematization, as he defines it, is a specific work of thought (O’Leary 2010). Problematization can bring to light previously unproblematised issues thereby making them ameliorable to change. However, as Fassin suggests, scientific (including biomedical) research can lead to perpetual problematizing at the expense of solution-seeking. I suggest that biomedical research can serve to perpetuate its own problematization of malnutrition, thereby distracting from its amelioration. This relates to the notion that a precise understanding of the “problem” in a
Biomedicine

Situated at the intersection between science and society lays a particularly socially-embedded subsystem of science referred to as biomedicine. This is the modern medical system in which, “the claims of medicine to autonomy have increasingly rested on its claims to a scientific identity—and to the interest free and inevitably beneficial implications of that view of the profession” (Rosenberg 1979:2). As we have seen, science is not objective; and medicine, as an especially social and humane scientific institution, is even less so. By looking historically at biomedicine and attempting to remove it from the intellectual and benevolent framework where it resides, we can begin to understand “how wide the gap was between knowledge and its applications, how sensitively medicine mirrored social values and the forms of economic power” (Rosenberg 1979:2).

Biomedicine and imperialism in Africa

Much scholarship has been written about the intersection of biomedicine and colonialism in the late 19th and early 20th centuries. In “The Diseased Heart of Africa,” Jean Comaroff argues that the rise of biomedicine in Europe was contingent upon 19th century imperialism in Africa (Comaroff 1993). She says:

Medicine and imperialism in nineteenth-century Africa are seen to be inseparably joined in practice and concept. The evolving field of biomedicine, introduced by missionary healers, provided images of an ailing body that would justify the intervention of a colonial state as it imposed its own order of domination. (303)

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17 In a Foucauldian sense, scientization of knowledge is specifically connected to the making of a disciplinary system of social control and acts as a form of governmentality (Foucault 1980). Although this is something I occasionally draw on in this thesis, as mentioned in the introduction, I use scientization more generally to refer to the process of framing hunger as a scientific issue within scientific discourse. It is important to note, in reference to Foucault, that scientization occurs on a societal scale but also becomes internalized within individuals.
The European worldview bred both colonialism and the sciences, and the social sciences in particular, developed from a great deal of interaction between these ideologies. Furthermore, the essence of colonization, as Jean and John Comaroff explain, lies in the process of transforming others by conceptualizing, inscribing and interacting with them on terms not of their choosing in which they become silenced subjects—but never absolutely—and workable objects that become represented through the colonizers’ means (Comaroff and Comaroff 1991:15). In this sense, similarities of methodology can be seen between colonialism and science in treating Africans as objects. In many cases Africa served as a laboratory for scientific and medical practices and notions, including in the field of eugenics and the use of skull structures to differentiate races and intelligence (Comaroff 1993). Anatomy, phrenology, medical science, and other fields arose in parallel with imperialism. Some of this early research had the simultaneous goal of furthering scientific knowledge and classifying and biologically analyzing human races18 (in part, to elucidate degrees of humanity) (Hudson 1996). The racial overtones were not subtle and scientific research validated the use of terms such as primitive, backward, degrees of humanity, and so on in relation to Africans. Furthermore, with the introduction of biomedicine to Africa, a form of imperialism referred to as “humane imperialism” emerged. As much as the introduction and development of biomedicine in colonial Africa had a critical and widespread legacy, it is also important not to overlook the influence that colonial Africa had on biomedicine. This influence occurred in part through its role as laboratory for medical practices and notions and also, as we will see, the development of tropical medicine.

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18 The first use of race in scientific literature appeared in a short article in 1684 written by the French scientist François Bernier who distinguished between four “Especes ou Races d’hommes”: Europeans (including Persians and North Africans), black Africans, Chinese, and Lapps (Hudson 1996). At this time, race (or tribe or variety) was a general (and highly uncertain) classification of peoples. During the early 18th century, race for the first time became a subject for biological analysis and classification.
Biomedical history is intimately connected with imperial history in Africa; however, biomedicine portrays itself as objectively scientific and value-free, not as a socially embedded healing system and institution. Megan Vaughan, in *Curing Their Ills*, discusses the need to deconstruct biomedicine in terms of its social context and history; that is, to approach its history, development, and discourses as one would approach any traditional healing system (Vaughan 1991). This history enables the elucidation of social values and constructs within biomedical discourse. For instance, during the 18th and 19th centuries, Western medicine in Africa focused on elaborating the social causes of disease—backwardness, superstitions, and laziness—as a means of spreading Christianity and trying to create a new “African Man.” The socio-historical context of biomedical research and practice is reflected in the social and cultural themes portrayed within the studies of Africans and their environment.

A unique biomedical development created at the intersection between colonialism and biomedicine in the late 19th century was tropical medicine. Tropical medicine developed differently in diverse colonial contexts; this section will focus on its development in Africa specifically. Defined as the study of diseases in the tropical regions of the world, its focus in Africa lay predominantly in the study of diseases that adversely affected the ability of white people to live in the tropical regions of the continent. The father of tropical medicine, Patrick Manson, believed that tropical diseases were those most prevalent in warm climates, a belief that enjoyed a wide consensus among his peers. This definition placed a focus on the geographic and climatic distinction between Europe and Africa and thus placed an insurmountable boundary between the two disease spheres. As Douglas Haynes explains, “By stressing the distinctiveness of disease in the tropical world…metropolitan-based specialists did more than simply justify their existence…They helped to perpetuate the long-standing imperial stereotype of the tropics as
fundamentally different from, and therefore inferior to, Europe” (Haynes 1999:228). The term “tropical medicine” also helped to solidify these dichotomies by repackaging racial dichotomies in the “humanitarian-wrapping” of medicine. Tropical medicine could be construed to fit the “ambassadors in white” metaphor of the benevolent imperial states setting up a tailored medical practice and research agenda for their subjects, even though it was founded to help colonists settle and survive in Africa. It also helped to solidify the concept of race and difference without explicitly invoking the terms of race and culture. As will be described later, many forms of malnutrition, including kwashiorkor, have for many decades been regarded as tropical diseases.

_Biomedicine and power_

Power is deeply embedded in biomedicine because of its claims to a scientific identity, but biomedicine also has unique forms of power derived from its position as a human institution that confers trust, social contracts, and ethics. Medicine often exerts its power through non-agentive forms, which the Comaroffs explain as internalized, largely invisible forms of power. This non-agentive power can appear in different guises: constraints (negative guise), conventions (neutral), and values (positive) which appear throughout biomedicine in both practice and research (Comaroff and Comaroff 1991). One example from biomedicine that straddles non-agentive and agentive power is the differentiation and classification of normal and abnormal (e.g. pathologic), such as overweight versus normal weight. Scientists (as agents) create these classifications, however the norms become internalized.

Power in biomedicine, and science more broadly, also resides in the divide between the subject and the researcher; this distinction provides the platform for making the subject an object of research. Foucault explains that “knowledge follows advances of power, discovering new objects of knowledge over all the surfaces on which power is exercised” (Foucault 1977a:204).
Indeed, even in the case of knowledge itself, someone must define some thing as knowledge. There are many forms of knowledge, but what is labeled as “truth” is that recognized by those in power. Knowledge is also the state of being acquainted with things and since those in power can shape the constraints on individuals and who is acquainted with who and what, those in power can both limit people’s knowledge but also gain access to new objects of knowledge.

One particular form of power embedded in biomedicine is what Michel Foucault calls disciplinary power. He explains how the individual in a regime of disciplinary power becomes “an object of information, never a subject of communication” (Foucault 1977a:200). In science, the subjects are objects of information; in biomedical research of Africans, Africans became the objects for Western science. Biomedicine and disciplinary power both individualize people and make them into distinct, calculable, observable entities. Alexander Butchart explains how the “…the birth of the migrant labor population as a distinct economy of human bodies required the deployment of methods by which to transform the collective and individual bodies of Africans into a systematized domain of knowledge about how disease, deviance, and normality circulated within it” (Butchart 1996:188). In his example, migrant miners in South Africa underwent biomedical testing in which diseases were mapped directly onto the body without regard for the environmental causes of disease—essentially biologizing disease in order to blame the victims for high African miner mortality.

On the other hand, Randall Packard claims that biomedical power also operates through the specification of groups. A prime example is the invention of the “tropical worker.” The tropical worker was a category created within the mining community to distinguish between pools of labor: it described a group of African people defined by the geography of where they lived and not tribe, language, skin color, culture, and so on. This was an arbitrary and ambiguous
category that served the needs of the mining industry by creating a category of homogeneous African individuals (Packard 1993). Malowany (2000) explains that “the impetus for the establishment of the South African Institute for Medical Research in 1913, funded by the chamber of Mines, was embedded within… the construction of the ‘tropical worker’” (336). Thus the very definition of tropical worker both reflected social beliefs and shaped social practices. Both the creation of classifications of diseases (and people) as well as the individualization of biomedicine that reduces disease to a personal, biological problem are critical to the process (and consequences) of medicalization.

Definitions and classifications

As we just saw, classifications (and categories) are an important form through which biomedicine wields power and this warrants a closer look at what classifications are and how they function. Classification involves the division of the world into complete and discrete spatial, temporal, or spatio-temporal categories (Bowker and Star 2000:10). An ideal classification system provides total coverage of the world it describes, but of course, this ideal never exists and classifications often substitute precision for validity. Classification systems are a way of ordering human interaction and they do so largely invisibly and silently. As such, classification systems are central to social life, and therefore “the work of making, maintaining, and analyzing classification systems… is one of the central kinds of work of modernity, including science and medicine” (Bowker and Star 1999:13).

Along with the progression of science in the 18th and 19th centuries came the increasing importance of establishing a standardized, scientific classification system. Classification systems have long existed, however, as the scientific method moved, “from a practice of knowledge that looks at representations… to a practice that seeks explanations in terms of hidden depth, ‘an
interior mechanism’ beneath the surface of representations” (Edkins 2000:16), the concept of an interior truth and structure became fundamental to scientific classification. And classification became central to scientific inquiry. The late 19th century saw an, “explosion of natural history and medical classifications…both as a political force and as an organizing rubric for complex bureaucracies” (Bowker and Star 2000:3) with people classifying and standardizing just about everything from human races to diseases as a means of creating order. Moreover, this order was believed to reflect an interior truth of the organism or system in question.

However, classification systems are not merely abstract organization tools; classifications have power as a political force. Categories invisibly order human interaction and they act both to promote cooperation across social worlds and to erect boundaries between them (Bowker and Star 2000:15). They also valorize one point of view and silence another, which, as Bowker and Star explain, “is an ethical choice, and as such…is dangerous” (5). In addition, there are competing classification systems, some which become standardized and thus applicable beyond the individual, and one that becomes formalized, with consequences for the power of this classification system to structure society (15). The idea that scientific (and biomedical) classification is based on an internal truth gives (scientific) credence to the superiority of this classification system over others.

Moreover, power is embedded in the process of classification, not just the classifications themselves. Classifying multifaceted social and biological phenomenon like disease and race reduces this complexity into discrete, defined categories with important consequences. Moreover, classifications are dynamic and shift historically with effects on the people and

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19 As we saw above, the classification and standardization of species, human race, and disease was common in Africa in the 19th century. This is one of the ways in which African imperialism has been fundamental to the development of western science and biomedicine.
phenomena that are classified. This is something that will reappear throughout the history of malnutrition classification in Africa. As Bowker and Star explain at length:

The real issues [today] are scientific and technological, stripped of the conditions of production… But there is more at stake—epistemologically, politically, and ethically—in the day-to-day work of building classification systems and producing and maintaining standards than in abstract arguments about representation. Their pyrotechnics may hold our fascinated gaze, but they cannot provide any path to answering our moral questions. (Bowker and Star 2000:10)

Classification systems are critical to our society as more than a tool of scientists and bureaucrats because categories do things: they order, they exclude, they diagnose, they label. In addition, classification systems need to be continuously maintained and this maintenance work (by scientific researchers for instance) gives specific institutions and individuals significant power—politically, socially, ethically.

While classification often substitutes validity for precision, it is the goal of the scientific method to develop precise classifications through rigorous study. This is especially important in biomedicine where diagnosis and institutional response depend on classification. As we will see later, biomedical research on kwashiorkor has focused on the continued obsession with medical diagnoses, definitions, and classifications in search of accessing the truth of the scourge and thus the prescription for its alleviation. The reliance on definitions of disease to form classifications is problematic not only because it results in continuous re-problematization, but because definitions lead to theories, which are inseparable from practice. As Edkins explains in her consideration of famine, theories, “do not represent a number of differing approaches to the same problem (a ‘famine’): a famine is constituted by theory…Each [theory] gives a different account of what famine is and derives from this a prescription for policy. Theories are not just abstract ideas. They have concrete results: they are social practices” (Edkins 2000:19). In other words, theory is best understood as practice.
The political and social power of classification is particularly important with regard to biomedicine. Biomedical classifications are largely based on (and produced by) the differentiation of abnormal and normal. Rosenberg explains: “in our culture a disease does not exist as a social phenomenon until we agree that it does—until it is named” (Rosenberg 1992:xiii); however, it can also be said that diseases are not only given identities, diseases give identities to people. For instance, today people with diabetes are often called diabetics, those with hemophilia, hemophiliacs, and so on. This shows how classifications can do things, in this case identify and label people so that diseases become part of peoples’ identities. Moreover, as Rosenberg explains, the medical profession has always sought “an intellectual framework with which to help rationalize its basic function, the treatment of disease, and its subsidiary role, the explanation of human difference” (Rosenberg 1976:33). One of the most important functions of biomedicine is the explanation (and therefore classification) of human difference. And these definitions of disease (and human difference) categories reflect social, economic, demographic and attitudinal factors and have consequences for these factors as well (Rosenberg 1979).

In the history of colonial Africa, as elsewhere, medical classification can segregate and lessen certain people’s agency over their own bodies and their social position (Vaughan 1991), while creating and reinforcing discourses of difference (Marks 1997). For example, in the late 19th century, British colonists in South Africa began to associate Africans with syphilis and used public health measures to control both racial and disease ecology, however, the racial frameworks of the age also shaped how doctors defined the disease (Vaughan 1991). Even as epidemics of syphilis were claimed to be venereal syphilis, it was fairly clear but ignored at the time that the outbreaks were actually endemic non-venereal syphilis. Thus the diagnosis of an

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African population infected with syphilis was not only a means of control over Africans, but also a diagnosis based on misidentification of the disease, which was itself based on racial prejudices.

*Science as a universal language*

In addition to the reliance on classifications, another central tenet of science is belief in its universality. As Steve Fuller clearly lays out, fundamental to the theoretical benefits of science are three main aspects of its universality: “1. Science aspires to knowledge of all things, under conditions potential and actual …2. Science aspires to articulate all things in a common language no matter how different these things may appear to our senses…3. Science aspires to be knowledge for everyone, a universal human legacy” (Fuller 2010:35-36). But science does not just aspire to be knowledge for everyone, as Fuller further explains, it seeks to make everyone believe in science because science cannot fully achieve its tenet of universality if everyone does not subscribe to it.

The universal language of science was a key form of communication between the colonial governments and the metropole. According to Saul Dubow (2006), science served as a common language through which metropole and colony could communicate, and this communication shaped research agendas and the practice of science in both localities. In addition, science served as a means of legitimation for the colonies in its relationship with the metropole. Within colonial South Africa, the relationship between politics and scientific research was particularly pronounced. As Dubow suggests, science was even more closely tied to government in South Africa than in the metropole. Scientific achievement was highly sought after and overemphasized in the colony in an attempt to prove its worth to the metropole in the universal language of science: “Distance from metropolitan scientific networks and fears of colonial inferiority or parochialism may also have meant that local scientific and technological
successes were overly-enthusiastically celebrated as a vindication of colonial progress” (Dubow 2000:9). Scientific research was highly regarded and promoted in South Africa because this expertise, when provided in the language of expert knowledge, could be exported internationally. The goal and source of pride for South Africa was to demonstrate that the local and particular formed part of a larger, universal scientific scheme.

In addition to the important of universality to science, modernism as the “new age of science and economics; of realism and rationalization; of the master narrative; and of knowledge-as-discovery” relied on quantification and collection of numbers (Comaroff and Comaroff 1991:15). This was symbolic of rationality, progress, and efficiency and it invaded all fields of society and knowledge. The 19th century saw the beginnings of an international vogue of statistics, in which statistics were increasingly important for measuring and emphasizing modernization and progress versus primitiveness and backwardness. Moreover, in the context of colonial Africa, the premium placed on the capacity to count the black populace rested in the resulting capacity to control the black populace. Productivity and efficiency became the aims of science and technology, statistics and quantification the means to measure progress and modernization, and science the universal language through which to communicate this progressive endeavor.

*Expert and local knowledge*

While science makes claims to universal knowledge and language, these claims are based on establishing a difference between local and “expert” knowledge. The authority to conduct research in search of universal knowledge lies in the hands of the experts; moreover, the increasing professionalization of scientific disciplines since the latter half of the 19th century reflects the significance of the *expert*. As Rosenberg explains in *No Other Gods*, when science
“becomes so popular as to be understood by a promiscuous audience, who had never been
trained in the classroom by the study of its abstractions, it loses that scientific essence from
which it derives its value, and is therefore no longer science but simply…so much worthless
claptrap’” (Rosenberg 1976:15). This specialization rose alongside the institutionalization and
the rational differentiation of bureaucratic sub-systems that Max Weber explains with the rise of
modern capitalism in the 19th and continuing into the 20th century (Weber 1958). This
widespread development led to professionalization across disciplines and placed new emphasis
on experts. As we will later see, when hunger was brought within the realm of science, it was
“brought under the sway of experts and technologies...Its position there, as an appropriate subject
for expert knowledge, remains a political position, but one that can lay claim to a political
neutrality because of the specific way that science is construed as ‘truth’ in modernity” (Edkins
2000:1). Experts possess power because they have the weight of scientific authority (with its
claims to truth) behind them.

Moreover, the power ascribed to the status of “expert” leads to the subjugation and
inferiorization of other forms of knowledge. In the example of hunger and famine, experts rarely
responded to or consulted local paradigms of knowledge and rather “framed their understanding
of African poverty and hunger in relative isolation from what the poor and hungry thought about
the origins of their plight” (Wylie 2001:15). Not only are non-experts excluded from contributing
to scientific knowledge, leading to their disempowerment, but local knowledge can only be
validated by scientific knowledge. In colonial South Africa, “the power to declare...African folk
knowledge as valid or invalid was assumed to be the sole prerogative of Western science”
(Dubow 2006:14). Science not only seeks universal knowledge but it can replace local
knowledge by re-writing it in the language of science; we will see an example of this as it relates to the scientific validation of “traditional” diets in Africa.

Throughout the history of research on malnutrition, there appears confrontation between expert and local knowledge. In this thesis, I use the notion of confrontation (or conflict) between expert and local knowledge to illustrate how scientists interact with (or ignore) the local knowledge that they encounter, either by validating or negating it, while also keeping in mind how “non-experts” react to the imposition of expert knowledge. Confrontation between local and expert knowledge illustrates the manner in which scientific knowledge produces local knowledge as a category and how scientific knowledge distinguishes itself from local knowledge (by reinforcing its methodology, for instance). Linguist Kanavillil Rajagopalan, in an essay about Brazil, writes about the implications of this confrontation:

Specialist or expert knowledge is all-embracing in its ambitions and global in its reach, and in order to maintain it that way, researchers concentrate on what is universally valid, sweeping aside everything that is subjective, occasional, sporadic or ephemeral. The so-called experts typically approach local problems with concepts and categories of analysis that were formulated *a priori* and without taking into account the specificities as well as the diversities of local environments. It is the logic of rationalist thought functioning at its relentless best. According to that logic, individual cases must somehow all be ‘cribb’d, cabin’d, and confin’d’ in terms of preconceived conceptual grids before they can be accounted for or explained away… (2005:100).

The conflict between expert and local knowledge highlights the “boundary work” performed by scientists to differentiate science from other ways of knowing. It also illustrates how scientists have either dismissed local knowledge or validated it through scientific inquiry and incorporation into the language of science.

**Medicalization— Reductionism and Technical Fixes**
The previous sections have briefly explored some of the major theoretical foundations of scientization and the relationship between science and power. It is also important to introduce some of the consequences of the medicalization of hunger. Meredeth Turshen explains the effects of medicalizing hunger in apartheid South Africa as such:

South African paediatricians may have developed an expertise in the understanding and treatment of malnutrition and its complications, but medical expertise does not change the system that gives rise to malnutrition nor the environment to which treated children return, an environment in which half the children die before their fifth birthday. Malnutrition, in this context, is a direct result of the government’s policies, which perpetuate the apartheid system and promote the poor health conditions and human rights violations. (Turshen 1986:891)

That is, although medical expertise saves lives and is important for clinical treatment, it can serve to ignore the causes of suffering among the poor. This effect of medicalization is the shift towards biomedical individualism, in which only biological determinants of disease—those that are amenable to intervention through the health care system—are emphasized and attention to social determinants of disease is secondary if not irrelevant; populations become simply the sum of individuals where population patterns of disease simply reflect individual cases (McDermott 1998). The reductionism of biomedicine places a focus on the proximate causes of individual illness and thereby deflects attention from the causes of causes of disease, otherwise known as the fundamental causes of disease (Rose 1992).

When hunger is considered to be a scientific (or medical) problem with technical causes, it follows that the solutions will also be scientific and technical; this is what I call technologization. Moreover, placing hunger within the discourse of science and technology detaches it from the political, economic, and social context in which it is produced and exists. Edkins explains: “…it means that hunger and how it should be combated are depoliticized. Technical solutions are sought… [but] Such solutions are inevitably inadequate to the problem,
which is not a technical one but one that accompanies specific forms of social and political organization…” (Edkins 2000:xvi). There have been many successful technical fixes to public health problems but the solutions to the majority of medical and social problems are not solely technical and by seeking these fixes the political processes producing and mediating health problems are ignored.

In the field of foreign aid and Western development schemes in Africa, several public health interventions stand out as success stories. According to William Easterly, among others, these include measles vaccination programs, vitamin A and iodine supplementation, and guinea worm and smallpox eradication programs (Easterly 2006). These programs are all characterized by top-down technical fixes to easily defined and pinpointed problems. Although these successes should not be discounted, top-down approaches like these have given rise to unwarranted optimism by the international public health community that these approaches can be widely applied.

Most public health scourges like malnutrition, diarrhea, and complex chronic diseases do not have direct and simply administered technical fixes. Indeed, although Africa is portrayed as a continent of starvation, many of the mass public health programs neglect primary care and malnutrition in exchange for the technical appeal of vaccinations and treatments for such diseases as HIV, malaria, polio, and more recently HPV. This marks a global problem in which “magic-bullet fixes are increasingly the norm for global health” (Biehl 2011:108). As anthropologist João Biehl highlights: “…initiatives are increasingly dominated by scientifically based measures of evaluation…[which is] a technical rhetoric aligned with the demand of funding organizations for technical solutions. Traditional public health initiatives are now slated
in the category of ‘non-science’” (106). As he points out, much of this drive for technical interventions is on the part of donors and funders—many of whom are affiliated with scientific institutions (e.g. the Gates Foundation).

This scientific preoccupation not only overlooks the specificities of localities in which these programs are implemented, but it tends to overlook the basic needs of people who need more fundamental services than technical solutions (like food and clean water). In the case of AIDS initiatives, Jim Yong Kim and Paul Farmer explain that in many rural regions of Africa, hunger is the major coexisting condition in patients with AIDS or tuberculosis, and these consumptive diseases cannot be treated effectively without food supplementation…the World Food Program…can help in the short term; fair trade agreements and support of African farmers will help in the long run (Kim and Farmer 2010:289)

Along these lines, when there is attention given to nutrition, the “solutions” tend to be food provisions like powdered milk and ready-to-use therapeutic foods (RUTFs). Increasingly, there has been a shift in the global hunger discourse from hunger and famine to “hidden hunger” (micronutrient malnutrition), which, most significantly, has existing technical fixes (like food fortification) (Kimura 2008). The question becomes whether the shift was due to changes in the composition of world hunger or due to the existence of technical fixes for hidden hunger, but not hunger (was the technology the cause or result of a shift in attention?). The medicalization of hunger is the medicalization of a socio-economic and political problem and this process ignores the underlying causes of hunger. In Death Without Weeping,

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21 In the chapter, “When people come first,” in Reed et al.’s 2011 book, Biehl explains the increasingly scientific outlook of global health initiatives. He also discusses a model example of the Brazilian AIDS initiative which diverged from the predominant scientific framework of health initiatives.

22 Donors and funders need to be able to count and represent “lives saved” which is one reason for promotion of technical interventions. However, technical fixes are often pursued as cost-effective, “scientifically legitimated,” and quicker than “solutions” that focus on fundamental causes related to political and economic inequality.

23 See Kimura’s (2008) article for how this shift in India has played out through the scientization of baby food. India has a very high percentage of undernourished and stunted children (which suggests a lack of food not just nutrients), so the question of whether the shift was due to technology in the first place is particularly salient in this context.
Nancy Scheper-Hughes paints a critical portrait of medicalization among the Alto population in northeastern Brazil. In this community, hunger is pervasive but discourses of hunger have been replaced with the discourse of *nervos*. *Nervos* is considered to be a disease that requires medication, despite the fact that it is in reality the sum effects of chronic starvation. The result is that people buy medications instead of food, both because it is easier to buy medicine and because it is more socially acceptable to be sick than hungry in a context in which food is not available. Scheper-Hughes explains: “A hungry body needs food. A sick and ‘nervous’ body needs medications. A hungry body exists as a potent critique of the society in which it exists. A sick body implicates no one. Such is the special privilege of sickness as a neutral social role, its exemptive status” (Scheper-Hughes 1992:174). As Edkins points out, in other historical contexts, hunger would be placed in the category of exempt from blame. But in the modern episteme, hunger is depoliticized and the blame placed on the individual or external forces. Moreover, medicalization serves to individualize hunger, thereby having the effect of negating hunger as a household, community, and societal problem. In the example of *nervos*, the community adopted a modern discourse of medicalization to redefine their hunger in a medical way. It can be thought of as such: the people have two paths to choose, one is the path of protest, the “other is to silence the pain, ‘surrendering more and more…to the technical domain of medicine’ where hunger will be treated as a disease with medications and the ‘scream of protest is silenced’” (Edkins 2000:154). The chosen path removes the social implications of hunger and the blame placed on the people themselves and replaces them with the neutrality of sickness and disease and the promise of a technical, rather than complex political fix. The remaining consequence, however, is that “Through the idiom of *nervos*, the terror and violence of hunger are socialized and domesticated, their social origins concealed” (Scheper-Hughes 1992:214).
Medicalization of hunger can also cause and ignore structural violence. Paul Farmer uses the term structural violence to refer to “offensives against human dignity,” which include poverty (extreme and relative), social and structural inequalities, and the more explicit forms of violence like human rights abuses (Farmer 2005:8). Implementing technical fixes alone is a form of structural violence, because it also ignores (and therefore reinforces) the inequalities (also structural violence) leading to the malady in question. A common mistake on the part of biomedical researchers, physicians, and public health officials is to conflate conceptualizations of culture and structural violence (Farmer 2005:47-48). Violence is a consequence of political action and law, whereas the study of culture as an object of anthropology and medical research has the ability to depoliticize the consequences of this violence. This difference is vital to the subject of global health because when health personnel and anthropologists blame culture for poor health, they neglect the fact that there are severe structural problems at play. By blaming “the other,” people reduce the blame on themselves, but this neglects and reinforces the underlying issues regarding people’s access to such basic necessities as food and health care. This tendency to blame individuals and to blame other cultures for their ill health was rife during the era of “humane imperialism” in Africa and remains so today:

Revamping old arguments in a new vocabulary, many explanations of poverty now blame the victims of globalization. The poor are poor because they deserve it: They have the wrong culture, the wrong values, or the wrong kind of behavior. The move is again moral—or rather, amoral to the extent that it absolves those with political and economic power from any kind of guilt or responsibility. (Trouillot 2003:57)

The tendency to conflate culture and structural violence was also rife throughout the history of malnutrition research.

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History of Nutritional Science and the Biologization of Food

Diet has been linked to health since the time of Hippocrates, however it was not until the 18th and early 19th centuries that modern nutritional science as a discipline began to emerge. These early nutrition scientists built on the work of chemists, such as the early advocate of protein, Justus von Liebig, and elaborated on the molecular components of individual food stuffs and the relationship between nutrition and growth and development. Macronutrients—protein, fat, and carbohydrates—were identified in the 1700s and scientists quickly came up with “ideal diets” based on optimum ratios of these nutrients. In the 1830s, the first fortified food was created when a French chemist added iodine to table salt to prevent goiter; however, food fortification did not take off on a large-scale until the early 20th century and exploded just prior to World War II (Nestle 2007). The early 20th century saw the discovery of vitamins—coined by Funk in 1912—beginning with vitamin B and soon followed by vitamin A in 1917 (Nestle 2007; Neill 2009). The discovery of vitamins catalyzed an enormous explosion of interest in nutrition research, eventually leading to the synthetic production of these vitamins, including vitamin A in 1949. The stage was set for the rise of “nutritionism.”

As Michael Pollan argues in In Defense of Food (2008), nutritionism is the resulting ideology of the scientization and professionalization of eating over the 20th century. Constructed by nutritional science and the food industry, the premises of nutritionism are: 1) what matters most is not food, but nutrients; 2) Because nutrients are invisible and best understood by scientists, expert help is critical to eating healthfully; and 3) The purpose of eating is to promote a narrow concept of health (Pollan 2008). The idea that experts know best, even when it comes to eating and agriculture, has had a profound role in the application of nutrition and agricultural science throughout the world, but especially in Africa where Africans were already categorized
as “unscientific” (Dubow 2006). In the early 20th century whites in Africa shifted from labeling Africans as primitive (with racial connotations) to “pre-scientific” (with cultural connotations). Thus, at a time when in the United States nutrition experts were beginning to preach nutrition advice to a populous considered to be open to science, experts in Africa were forcing “scientific answers” on a people they deemed to be unscientific and in need of conversion to scientific thinking.

This idea of nutritionism is predicated upon the notion of food as a biological (not a cultural and social) concept; however, in reality, food remains culturally-embedded. Since the biologization of food during the eighteenth and nineteenth centuries, food has been framed as “fuel for the human machine” with an emphasis on its calorific and nutritional value. This meant that nutrition status could be measured and malnutrition identified. However, “food is not something that exists as a pre-given object, awaiting analysis by nutritional science. It was produced as an object of study [by science]” (Edkins 2000:22). In contrast, in other times and places, food was not considered solely as fuel and flouted for its nutritional content, but was a “condensed symbol of society” (22). Food serves as a reflection and a marker of cultures and societies and can also be a tool with which to distinguish and prejudice peoples. Though there was a tendency toward the biologization of food during the eighteenth century, this is not the whole story and is not constitutive of the problems surrounding discourses of malnutrition in Africa; these problems lay in the fact that food continued to be a symbol of society, an emblem of culture, and socially embedded at the same time that it was enshrouded in the language of biology and nutrition. Thus, food remained a way to categorize cultures and prejudice people but this was inscribed within the language of objectivity and science. For example, as we will later see, French ideas about food in the 19th century reflected elites’ fears of the working class, and
diet became a way in which to express class status, for instance, through the consumption of meat (Neill 2009). This became incorporated into nutritional knowledge and influenced the European obsession with protein and meat as fundamental to an “ideal diet.”

There were particular political and social reasons for the development of nutritional science in various European nations in the late 19th century, but as the discipline progressed, it sought legitimization by trying to standardize a universal “ideal diet.” As historian Deborah Neill explains: “In France, as in Britain, this scientific interest in the dietary bases of human health arose for similar social and political reasons, including a determination to improve the dietary standards in the army and navy during the Napoleonic wars, and resolving the problems of food supply and quality for the burgeoning working class populations living in large industrial centers” (Neill 2009:3). As the 20th century approached, nutritional scientists began to reach beyond their national borders in an effort to standardize and quantify nutritional requirements. This can be seen as a means of universalizing (and thus legitimating) nutritional knowledge. They sought the discovery of an ideal diet and researchers from the metropole set out to investigate the diets of people throughout the world (Neill 2009). This was a move toward increasing scientization of nutrition with emphasis simultaneously on standardization and quantification, and on continuation of the cultural importance of diet.

Colonial nutrition

As nutritional science developed in the metropoles, this discipline inevitably spread to the colonies where it both influenced and was influenced by colonial Africa. Diana Wylie, in Starving on a Full Stomach (2001), asks why colonial researchers and officials became interested in African nutrition and hunger in the first place. Her answer sums up a few of the reasons that will be later investigated: “The contemporary international trend to investigate vitamin
deficiencies, the fashion of linking malnutrition to impoverished soil, anthropologists’ efforts to facilitate the modernization of colonial societies, and South African white fears about the shrinking of the labor supply” (Wylie 2001:149). Colonial officials “discovered” colonial malnutrition in the late 1920s and 1930s as something separate from the occasional famine which had previously garnered the attention of colonial officials. It was during this period that several important nutritional diseases, including kwashiorkor, were “discovered” in Africa and the study of colonial malnutrition greatly influenced the discipline of nutritional science in the metropole—including the study of PEM.

Neill also indicates that the birth of colonial nutrition centered its focus on the colonists. She explains how the diets of colonists in French Equatorial Africa incorporated nutritional scientific knowledge from the metropole and how this affected the practices of colonialism. Just as tropical medicine developed in order to improve the health of colonists living in tropical regions, nutritional science was important for colonists because doctors believed that it was not only what people ate but where they ate it that influenced their health. Thus, tropical medicine began to incorporate nutritional advice for colonists to improve their health abroad and colonial nutrition emerged as a sub-discipline. Colonial nutritionists realized the role of diet in affecting vulnerability to infectious disease and the relationship between tropical diseases and nutrition—at least for the colonists themselves. French experts even recommended eating diets reduced in meat and alcohol in the tropics—in essence, following the dietary practices of locals. However, it remained a central intention to maintain the superiority of European culinary traditions while abroad (Neill 2009).

Diet can serve as a symbol of culture, but it also can serve as a symbol of power and status. As such a symbol, diet becomes a theme through which to differentiate and classify
peoples (Wylie 2001:23). This becomes particularly problematic when discussed in the supposedly neutral discourse of science, especially in the context of colonialism. As colonists in Africa sought to differentiate themselves from Africans (and study these differences in Africans), diet became a key aspect of scientific study and practice. Diet, because of its centrality to culture, was also correlated with modernity and thus used as a measure of both modernity and progress. Food and colonial nutrition was not just a matter of improving health. According to Neill, “food was never just about saving one’s body from the tropical climate—it was also highly symbolic, designed to demarcate social space, assert social, economic and political power, and reinforce class or racial differences” (Neill 2009:21). Moreover, these moral, social, and political underpinnings of diet could be subsumed in the objective language and justifications of science and nutrition. One example of how culturally-embedded values ascribed to diet outweighed scientific justification was the assumed inferiority of native foodstuffs irrespective of the lack of “nutritional evidence.” Culturally-embedded beliefs about food inevitably affected colonial perspectives on local diets in the colonies.

Needless to say, colonists’ perceptions of local food systems were not static, and they continued to change as colonialism evolved in Africa. In central Africa, for example, “The development of French rule in the region and the subsequent rise of significant food shortages affected how the French saw local foodways over time” (Neill 2009:14). Food shortages and economic and political disparities caused conflict and divisions between the colonists and the native people, which became reflected in racial terms. Previously, few French nutritionists “had made significant racial distinctions in their guides [until] Gouraud emphasized bodily differences between the French and Africans to separate foodways as a means to distinguish between colonizers and colonized” (Neill 2009:15). That is, as conflicts between the colonists and native
peoples in central Africa increased, colonists drew dietary boundaries and nutritionists began to discuss the differences between African and European diets not only culturally and socially, but increasingly biologically. As we will see, these cultural, social, and biological framings of African diets and food systems extend to discussions of African malnutrition.

Conclusion

This chapter has laid out some of the primary theoretical frameworks within which this thesis is positioned. We have seen how a historical approach can enable us to trace the development of themes in the scientific study of malnutrition over time and to contextualize the concurrent social and political processes operating alongside scientific research. We have seen specifically how the historical relationship between biomedicine and imperialism was intertwined and how Africa became a laboratory for Western researchers, but at the same time it shaped biomedicine itself, including the development of a new discipline: tropical medicine. I also introduced some of the ways in which power becomes embedded in science, especially in biomedicine. This chapter also laid out the process of medicalization and its consequences, including the depoliticization and technologization of problems and solutions. Medicalization privileges expert knowledge and expert interventions and we will later see some examples of this in regards to hunger. Finally, I introduced a very brief history of nutrition science and how it intersected with Africa during its early development; the following chapters will elaborate on the development of this burgeoning discipline in the early 20th century. In the next chapter I analyze how scientific discourse has framed malnutrition in Africa, as well as Africans themselves.
Chapter 2
Scientific discourses on food, malnutrition, and Africa

“...a general principle ‘can lie so strongly at the back of scientists’ minds that it, rather than the observations, is the unconscious starting point of discussion, so that interpretation is not truly open to discussion.” -Diana Wylie, quoting Kenneth Carpenter (2001:161)

As we have seen, the biologization of food and medicalization of malnutrition developed over the course of the 19th and 20th centuries. This process of scientization led to the depoliticization of hunger, the neglect of its socio-political causes, and an increasing reliance on technical solutions. However, we have also seen that it is not only what biomedical perspectives ignore that affect how illnesses are discussed, alleviated, and treated; rather, biomedicine produces and is produced by social themes and cultural contexts which are discussed within the supposedly objective and universal language of science. I hope to bring to light some of the ways by which scientific knowledge shapes our perceptions of malnutrition in Africa. Specifically, I focus on how malnutrition became associated with biological pathologies at the expense of sociologic ones, and cultural pathologies at the expense of political economic ones.

In this chapter I employ the methodology of discourse analysis to examine the scientific and biomedical research on severe (primarily childhood) malnutrition. The themes in the scientific literature that I will focus on include: ahistorical interpretations of malnutrition in Africa; the scientific study of traditional diets, especially the conflict between local and expert
Health and Nutrition in Pre-Colonial Africa: Thinking Historically

As malnutrition became medicalized in the early 20th century, the history of nutrition and foodways in pre-colonial Africa became largely erased by scientific (biomedical, nutritional, and agricultural) discourses. Because scientific literature rarely mentions historical transformations—like land displacement and epidemics during colonialism—the current state of malnutrition is presumed to be as it had always been; nutritional diseases like kwashiorkor are assumed to have always existed in Africa and the blame is placed on Africans. However, when severe malnutrition was first documented in Africa, there had already been great social, economic, and political transformations across the continent, especially since the late nineteenth century.

The negation of historical context in scientific discourse reinforces historical assumptions about hunger as a relic of pre-modern times. Although there is evidence supporting good nutritional status among Africans prior to colonialism (which we will investigate in detail below) others have subscribed to the theory that hunger was pervasive before the introduction of “civilization” and modernity by the West (Webster 1986; Wylie 2001). Wylie, for example, in her discussion of hunger in South African history, notes that many South African historians and social critics have taken malnutrition as a given in the “primitive” past; she explains: “Living in the modern world where produce had become relatively bountiful year-round, people like Turner [a South African medical officer] looked upon seasonal food shortages, and the values and technology giving rise to them, as unnecessary vestiges of the preindustrial past” (Wylie
This relates to the modern notion of hunger as a relic of pre-modern times, from which societies can free themselves of through scientific progress. Wylie explains that researchers took a moncausal perspective to understand the interaction between increased agricultural production and health in European history. As evidence she refers to the work of British medical doctor Thomas McKeown, who argues that “since more food was grown in Europe between the seventeenth and mid-eighteenth century than earlier, people’s health must have improved and, therefore, people lived longer from the second half of the nineteenth century on” (12). This argument, based on process of elimination and sheer speculation rather than evidence, highlights the assumptions about scientific progress implicit in the reconstruction of the past which equate modernity with progress and hunger with pre-modernity.

In truth, there is little evidence regarding the nutritional status of the people populating the African continent prior to Western imperialism. Early European explorers’ accounts and archeological studies, however, indicate famines and chronic malnutrition were, to a large extent, a result of colonialism (through direct exploitation and the insidious effects of economic, political, and social inequalities). Because of lack of documentation, the complicity of European observers in creating a history for Africa, and the problems with retrospective application of the modern idea of nutritional status, there is great uncertainty regarding these historical assessments. Despite these difficulties, the comparison between historical accounts and the trends we will see in colonial and post-colonial research on malnutrition in Africa are important to remain cognizant of in order to trace changes over time.

Various European explorers documented the excellent health of the Africans they encountered on their journeys. For example, Ludwig Alberti in 1807 wrote: “The abundant

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25 George Albert Turner was a medical officer in South Africa around the turn of the century. In a 1909 medical journal, he wrote that African hunger was a result of the lack of enterprising spirit (Wylie 2001:39).
health enjoyed by these people [the Xhosa] must undoubtedly be principally ascribed to the simple food on which they live: milk, the principal dish, which is supplied in abundance by numerous herds of cows; meat, mostly roasted; corn, millet and watermelons, prepared in different ways, appease hunger…” (cited in Webster 1986:447). An account of the same region in 1593 reflects similar opinions and observations. This description exemplifies the apparent lack of hunger, at least in Alberti’s eyes, and highlights the diversity of the observed Xhosa diet.

Sjoerd Rijpma, a physician and historian, has written a nutritional history of Africa; in it she summarizes the remarks made by explorers about health and agriculture in Africa prior to 1880 (Rijpma 1996). They were, on the whole, amazed with the excellent health, especially children’s health and nutritional status compared to that in Europe at the time. Food was described as abundant, with the exception of occasional remarks about hunger seasons, and malnutrition appeared to be uncommon; repeated statements included: “‘They produce all the necessaries of life,’ and ‘they never starve’” (Rijpma 1996:53). Doctors also commented on the birth spacing and cultural taboos that limited high fertility. Finally, agricultural practices were also flouted as being as good as contemporaneous European methods:

Positive estimates of native food production systems are the rule. Hartmann wrote a scientific survey, while others gave information on specific regions: ‘Immense fields of durra’ (Uganda), and plenty of game, a ‘paradise with herds of cattle’ (Benguela and Kanem), ‘intelligent careful agriculturists in a land of great plenty’ (South-west Africa)… ‘great, industrious, hard working agriculturists’ (West coast), ‘not a single inch of ground is uncultivated, to an immense extent” along the Niger and in Uganda; ‘very beautiful cattle’ along the Zambesi, in pastures where ‘one believes oneself to be in Holland’: these are but a few of the many superlatives used. Others, like Galton, and Livingstone, described specialization in agriculture, when population-increase had made this necessary… (Rijpma 1996:57).

Webster reminds us that it is important not to romanticize the practices of subsistence agriculture in pre-colonial Africa as this type of agriculture was vulnerable to ecological changes because surpluses were not very large, and not all African societies were egalitarian (Webster 1986).
Regardless, it is important to note the rhetoric surrounding African agriculture in these reports. As we will see, the colonial officials and researchers’ perceptions of African malnutrition underwent a reversal after the 1880s.

In her survey of African nutritional history mentioned above, Rijpma suggests that malnutrition was uncommon except in areas of European intervention until the late 19th century with the European wars of conquest and colonialism in Africa. Likewise, Edkins suggests that “‘[n]either ethnographic evidence nor archeological data support the common assumption that malnutrition or starvation were particularly common among early and/or ‘primitive’ human groups.’ Famine was not prevalent in prehistoric times” (Edkins 2000:34). In contrast, a district surgeon working in a region close to where Alberti had visited had something very different to say centuries later in 1937: “‘Unsatisfactory conditions of living and nutrition are amongst the chief factors in spreading malnutrition...the former accounted, I'm afraid, for a considerable infant mortality and pellagra-like conditions among the adults’” (cited in Webster 1986:447). Comments like this indicate widespread malnutrition and poverty in Sub-Saharan Africa in the early 1900s; significantly, this was also the time period when scientific research on malnutrition proliferated.

Many drastic alterations with widespread effects on African health and nutrition had already occurred prior to the “discovery” of childhood malnutrition in the 1930s, including devastating epidemics. During the last decades of the nineteenth century a rinderpest epidemic killed off nearly 90% of cattle herds in Sub-Saharan Africa, vastly diminishing a major protein source for many Africans (Malowany 2000). Over the next several decades epidemics of plague and sleeping sickness devastated the human population. These epidemics, compounded by drought and famine, drastically affected the health and nutrition of many Africans across the
continent. It was after this period, in the early 1900s, when colonial researchers began taking note of Africans’ nutritional status.

There is scientific, as well as anecdotal, evidence that suggests nutritional status in Africa declined after the rise of colonialism. There is also contextual evidence to support the direct effects of colonial policies (such as migrant labor) on African nutrition. For example, Wylie writes that the medical history of malnutrition in Africa obscured the more overtly political version of the same history in which:

milk and produce yield in the reserves was declining because of an increasing man-to-land ratio related to the static size of the reserves…[and] some women were caring for the nutritional health of their children less effectively because they themselves were bearing the economic and physical burden of maintain their households in the absence of their poorly paid husbands. (Wylie 2001:199)

The negation of this political history allows for the reinforcement of historical assumptions, like the association of hunger with pre-modernity, and as we will see, this affects assumptions about the research subjects (in this case associating Africans with primitiveness). As British sociologist Paul Gilroy writes, racism “‘rests on the ability to contain blacks in the present, to repress and to deny the past’” (cited in Wylie 2001:16) and the withholding and negation of the historical context behind malnutrition within scientific studies contributes to this violence. The history of malnutrition in Africa is problematically intertwined with imperialism and colonialism, and by scientizing malnutrition this socio-historical context is overlooked and forgotten, but the material consequences of historical transformations are not erased.

One way in which nutritional and biomedical researchers have (problematically) turned to the past, is through the study of traditional African diets.
The Scientific Study of Traditional Diets

Since the early period of African imperialism, Europeans have taken an interest in the observation and study of traditional African diets; however, this interest sharpened with the growth of nutritional science in the 20th century. With the scientization of hunger and the professionalization of nutritional science came the discipline’s pursuit of validation and negation of traditional diets. Western and colonial researchers were interested in traditional diets because they wanted to standardize an “ideal diet,” discover the aspects of native diets that led to malnutrition, and validate the “healthy” characteristics of traditional diets. Although “good nutrition is an elusive and culturally bound concept,” (Wylie 2001:10) the power of scientific hubris enabled the validation of good nutrition to fall within the hands of nutritional science.

Before delving into the discourses of these studies as well as their consequences, it is important to highlight that the language of traditional conveys the notion of a static and unchanging people that puts Africans outside of history. It fails to account for the drastic changes that already occurred on the continent prior to the researchers’ investigations. Though the implications of these studies are problematic, the interest of nutritional scientists in African diets is important epistemologically in terms of the knowledge produced about nutrition and the confrontations between local and expert knowledge.

During the late 19th and early 20th centuries nutrition researchers set out to investigate the diets of people throughout the world to standardize nutritional science and the “ideal diet” (Neill 2009). The aim of nutritional research at this time was to validate and standardize the burgeoning discipline of nutritional science. Researchers took interest in the components of diets that were common across cultures and peoples throughout the world with the goal of standardizing diet recommendations in the metropole in the language of nutritional science. This language included
the formal classifications of macro- and micronutrients—the latter of which were being isolated and studied prolifically as this time—and the vogue of the calorie (Rosenberg 1976). However, research of traditional diets was not only performed for the purpose of standardizing and formalizing an ideal diet; the scientific study of traditional diets also sought to validate the relationship between nutritional status and traditional diets. These studies relied on the standardization of nutritional science that was occurring concurrently. Nutrition researchers also relied on the assumption that diet could be used as a full measure of nutritional status, which was a new idea produced alongside the professionalization of the discipline of nutrition science.

As a result of increased discussion of African malnutrition in the African colonies beginning in the 1920s, nutrition researchers in the metropole began to study colonial diets. Two such researchers, John Boyd Orr and John Gilks, compared the “value and impact of Masai diets…” but as Wylie argues, “Their conclusions owed more to their preconceptions that it was unhealthy to eat blood or simply vegetables than to the rigor of their logic” (Wylie 2001:144). Native diets were presumed to be primitive and this presumption is reflected in the conclusion that the Masai diet was deficient and substandard. The rhetoric also reflects the criteria by which scientists validated or negated traditional diets. In 1950, John Fleming Brock, a prominent physician and advocate of social medicine and human nutrition, and Marcel Autret, Senior Nutrition Officer of the Food and Agriculture Organization (FAO), were hired by the World Health Organization (WHO) to conduct a study on kwashiorkor in Africa. In their well-known final report they compared the dietary habits of many groups across Africa and attempted to correlate these diets with the prevalence of kwashiorkor. According to Brock and Autret, the Masai people, whose diet consisted largely of milk and meat, were very healthy and had no cases of kwashiorkor. Their conclusion (and presumption) was that protein made them healthy (Brock
and Autret 1952). The blood component of the Masai diet did not deter Brock and Autret from validating it as healthy (unlike Orr and Gilks) because of their chief interest in protein (which the Masai diet was rich in).

The assumption that diet was a full measure of nutritional status was common throughout scientific reports in the early-mid 20th century. When Cecily Williams “discovered” kwashiorkor in 1933, she proposed the overreliance on (protein-deficient) maize as a possible cause. It was clear throughout her reports (and even the title of her report: *A nutritional disease of children associated with a maize diet*) that malnutrition was assumed to be caused by a dietary issue and nutritional status was framed in strictly dietary terms. Many researchers saw native diets as monotonous—consisting solely of rice, maize, or cassava—and linked this with the development of particular nutritional diseases. They rarely, if ever, questioned the reasons for the monotonous diets and did not compare them to the accounts of explorers (quoted in the above section) who praised African diets. Furthermore, Brock and Autret sought to measure food consumption in the pretext of quantifying malnutrition, presuming that diet and nutritional status were directly related and quantifiable. However, they soon discovered that “…it is difficult, if not impossible, to estimate food consumption in quantitative terms. The foods eaten at home only represent a part of daily consumption and an account cannot be easily taken of foods eaten outside the home, e.g., leaves, small rodents, and insects” (Brock and Autret 1952:39). The existence of wild foods within the study population’s diet was not depicted as conferring an important health benefit, but rather appeared as an obstacle to the rational, calculated account of food consumption. The realization that food consumption was not fully quantifiable did not lead to further questioning about the possible other factors affecting nutritional status, rather it led to the negation of this
form of food collection in their study. In the absence of a quantifiable diet, researchers constructed its existence.

Another example of the disregard of wild foods within scientific and official discourse is discussed in Vaughan’s book on the Malawian famine in the 1940s (Vaughan 1987). This example highlights the conflict between local and expert knowledge in particular. During these lean times many women would go out and collect wild greens (like spinach) and relish crops, which, while not high in calories or as filling as their staple crops, were in all likelihood very nutritious and diverse. Vaughan speaks of the disbelief of Malawian officials and scientists during the 1940s famine when the urban population survived months longer than the officials anticipated based on their statistics of stored crops (Vaughan 1987). Experts had not taken into account these hunger season foods or local people’s coping strategies in their assessment of local diet. Experts did not consult the local people or comprehend local paradigms of knowledge during the famine and this tendency was even more common in policies geared towards ordinary malnutrition than famine. Moreover, policies that ignored these coping strategies or prevented access to wild foods threatened the lives of those who were vulnerable.

At the same time that nutritional researchers were trying to standardize the ideal diet, and other researchers sought to discover what about native diets caused malnutrition, still other researchers were investigating traditional diets with the preconception that they were actually healthy. One of the most prominent of these researchers was the American dentist, Weston A. Price. In the 1930s, Price conducted a worldwide survey of traditional diets to determine if traditional societies had lower rates of chronic diseases than people who consumed a “Western diet.” In 1938, he published a book flouting the health benefits of “traditional” diets throughout
the world (Price 1970).\textsuperscript{26} The dichotomy between traditional diets (with the incorrect assumption that they do not change) and Western diets is oversimplified but it is an important framework through which to view instances of intersection and conflict between local and expert knowledge.

In the 1930s, Price traveled the world to study traditional diets. His research approach involved observational methods to assess physique and health, interviews with doctors and locals, sampling of food for chemical analysis (including 2,500 negatives), and dental surveys looking specifically for dental caries\textsuperscript{27} and jaw irregularities. He used dental caries as a proxy for degeneration of health. His main concern was finding out if there was a difference between the dental (and physical, mental, and moral) health of primitive tribes versus “modernized tribes” (or individuals). His worldwide journey included a visit to Africa where he studied the diets of about 30 different tribes. He wrote: “Africa has been the last of the large continents to be invaded and explored by our modern civilization. It has one of the largest native populations still living in accordance with inherited traditions. Accordingly, it provides a particularly favorable field for studying primitive racial stocks” (Price 1945:129).

Price not only studied the diets of native Africans but also underwent a scientific study of the “primitive” people themselves. It is unclear whether he consulted local paradigms of knowledge to learn from the people or if he treated local knowledge as his object of study. He relied heavily on his own observations and also invoked assumptions about each tribe. For instance, this passage is representative of the introductions to each tribe in his book: “\textit{Jalou tribe, Kenya.} This tribe occupies the territory along Lake Victoria and Kisumu Bay. They are one of the most intelligent and physically excellent native tribes” (Price 1945:139). He judges the

\textsuperscript{26} There is now a Weston A. Price Foundation with the slogan: “for wise traditions in food, farming and healing” (See website: www.westonaprice.org).
\textsuperscript{27} Dental caries is another name for cavities or tooth decay.
physique (and often mental status) of each tribe (by observation and other unknown criteria) and relates this to diet. For example, as a caption for an image of four African men, he says: “The reward of obeying nature’s laws of nutrition is illustrated in this west nile tribe in Belgian Congo…Their bodies are as well built as their heads” (144).

Price’s “nutritional exploration” of Africa contains similarities to Brock and Autret’s report, although he declared interest in the traditional wisdom of the tribes he studied. Like Brock and Autret, he emphasizes the superior physique and high-protein diet of the Masai and highlights in particular their great height. He draws an association between health and consumption of protein when he claims that agriculturalists have healthy diets except for their lack of milk or fish (in comparison to other tribes), which means they have inferior physiques and “have been dominated because they possess less courage and resourcefulness” (Price 1945:142). Overall, he claims that traditional diets lead to superb health outcomes and highlights that native people do not suffer (at all, or rarely) from such diseases as “appendicitis, gall bladder trouble, cystitis and duodenal ulcer. Malignancy was also very rare among the primitives” (133). He also shows that the “primitive” people he studied had far fewer dental caries (0-1% of teeth per sample population) or jawbone irregularities than tribes or individuals who had been modernized (dental carries in 12% of teeth).

Price’s primary purpose in his study is to highlight the associations between modernization and facial deformities. He suggests that “while the primitive racial stocks of Africa developed normal facial and dental arch forms when on their native foods, several characteristic types of deformity frequently developed in the children of the modernized groups” (153). His language becomes especially problematic when he discusses these facial deformities, which he claims are caused by modern diets: “These extreme deformities often produce facial
expressions that are suggestive of the faces of some of the monkeys” (157). As a supplement, he includes three pictures of young boys next to an image of a chimpanzee. Later in his discussion he says, in reference to two images of very young boys: “These two native African children scooted around on all fours so swiftly that it was difficult to take their pictures. We did not see them stand up. They behaved very much like tame chimpanzees” (160). These comparisons of Africans and monkeys reappear throughout the section on the diets and health of African tribes, as does the word “primitive.” This emphasizes the type of representations about Africa that were common in scientific literature on African diets, even when the intent of the research was to show the healthfulness and wisdom of traditional diets.

Highlighting the importance of traditional wisdom and the practical knowledge that can come out of studies of traditional peoples, Price concludes with:

In my studies of these several racial stocks I find that it is not accident but accumulated wisdom regarding foods that lies behind their physical excellence and freedom from our modern degenerative processes, and further, that on various sides of our world the primitive people know many of the things that are essential for life—things that our modern civilization apparently do not know. These are the fundamental truths of life that have put them in harmony with Nature through obeying her nutritional laws. (Price 1945:162)

He emphasizes the wisdom of the tribes he studied but he does not in any way liken this wisdom to that of scientific knowledge; it is an experiential, natural, primitive type of wisdom. He goes on to say that “…it must be that these various primitive racial stocks have been able through superior skill interpreting cause and effect, to determine for themselves what foods in their environment are best for producing human bodies with a maximum of physical fitness and resistance to generation” (Price 1945:162). He emphasizes the adaptation and evolution of native diets, distinguishing this type of knowledge acquisition from that of science which involves experiments and the specificity of the scientific method. This highlights the difference between
local and expert knowledge, as well as demonstrating how science performs “boundary work” by emphasizing its difference from other ways of knowing. Price needed to scientifically study these traditional diets to validate them for the Western world (and scientific knowledge).

Significantly, Price also emphasizes the traditional African wisdom regarding mother and child nutrition and health. He claims that “Of the many problems on which the experience of the primitive races can throw light, probably none is more pressing than practical procedures for improving child life” (Price 1945:403). Many of the African tribes he studied fed girls and women special foods for an extended period before marriage and through pregnancy, while the mother was breastfeeding, and during the weaning period. These special foods included linga-linga, which is the same plant as quinoa (common in the Peruvian Andes and popular among Peruvian Indians). Price noted the botanical name of the plant and highlighted that “this cereal has the remarkable property of being not only rich in minerals, but a powerful stimulant to the flow of milk”—thereby emphasizing the scientific knowledge so far known about the plant (403). He also noted that native African mothers took excellent care of their infants and stressed that Western doctors and mothers could learn a thing or two from the traditional practices of childrearing (in fact some already had) (399). Overall, although Price did acknowledge the traditional wisdom of the native African tribes, he did so only after he had studied them—thereby turning the local knowledge into expert knowledge, reducing the African people to objects of research, and validating the usefulness of traditional diets for scientific study more so than for their own inherent wisdom.

Despite being upheld as emblems of healthy eating by Price, along with other researchers, traditional diets were not acknowledged as such until they were fit into a scientific model. Scientific investigation was required to “prove” the healthfulness of these diets within the
universal language of science. Local knowledge was not seen as advanced in its own terms but only after it was validated by science. This logic presumes that science knows best how to determine and define “good nutrition.” But as Wylie said, “Good nutrition is an elusive and culturally bound concept” (Wylie 2001:10) and when science makes the claim that it can validate good nutrition, it not only reflects scientific hubris, but also negates other knowledge paradigms and concepts which fall outside the realm of science. Wylie provides the example of George Albert Turner, a medical officer in South Africa who “…made grave mistakes about what constituted a healthy diet; thinking that fresh vegetables, for example, consisted mostly of water, he wrote that they supplied limited nourishment to the body.” She continues: “One crowning irony of cultural chauvinism is that people who themselves possessed less local scientific knowledge disparaged those who knew more” (Wylie 2001:55). Even today, scientists have not been able to construct a complete understanding of the health benefits of traditional diets because the scientific method of reductionism and the investigation of components of diet do not capture the essence of the diet as a whole.

As mentioned above, the scientific study of traditional diets, whether to validate their healthfulness or to prove their relationship to malnutrition, often focused on diet as a full measure of nutritional status. But nutritional status is not just a matter of quantity and quality of food. Although some researchers studied traditional diets with the sole objective of elucidating the biological and biochemical components of food, many others studied traditional diets in relation to nutritional status. But by reducing nutritional status to diet only, they ignored the influences of “poor housing, unemployment or low wages, and infectious diseases” which persist if nutritional status is only considered in terms of food production and consumption (Wylie 2001:12). The reduction of health to nutritional status and nutritional status to diet also parallels
the scientific reduction of diet to nutrients. The tendency to pinpoint a specific food or nutrient that provides a health benefit from a traditional diet while ignoring the combination of foods and the social influences and impacts of eating, has been a common theme of nutritional science. In much of the nutritional research conducted in Africa, diet was treated primarily as a matter of biology. Likewise nutrition interventions were often promoted to solve problems viewed scientifically without regard for the other important aspects of food and eating to culture and well-being (Wylie 2001). The approach of scientific investigation also reduces the meaning of traditional knowledge to such a degree as to highlight the power of science more than the traditional knowledge itself.

**Constructing a Framework of Famines**

The scientization of diet was part of a larger project of constructing a scientific framework of hunger and famine. Discussion of the frameworks for understanding of famines is important to the discussion of severe malnutrition because: 1) Famines were the first instances in which malnutrition was observed and discussed in Africa, as elsewhere in the world; 2) Famines occur on the back of pervasive malnutrition; and 3) Kwashiorkor and other forms of severe malnutrition often appear during periods of famine. Because of the devastation they cause and international attention they elicit, famines help expose the underlying societal structures, practices, and discourses that allow malnutrition to persist. But while famines can elicit attention and humanitarian aid on a large scale, chronic malnutrition often fades into the background. The frameworks of famine allow us to piece together some of the discourses surrounding hunger in the past century. To begin with, it is helpful to look at how Edkins approaches the study of the technologization of famine and medicalization of hunger.
In Edkin’s critique of famine concepts and aid practices, *Whose Hunger?* she argues that the very discourses of science and modernity in which discussion of famine resides, inhibit famines from being prevented because science and modernity are complicit in their creation. In the same vein, severe malnutrition is approached through the discursive practices of modernity and science. She examines instances of technologization of famine through a series of “repoliticizations” (Edkins 2000:xix). The first step is to frame famine in scientific terms:

Famine…becomes biologically rather than socially constituted and is combined with a medicalization of hunger. The result is that famine is constituted as a natural disaster with a scientific cause…Second, famines are framed in terms of scarcity. Thomas Malthus’s work is important here, and it has been and remains basic to many contemporary representations of famine…The third move is the way politics becomes biopolitics…By means of these three moves, modernity depoliticizes famine. (Edkins 2000:xx)28

From this historical process came the incorporation of hunger into the modern episteme and from this point on, the authority of addressing the problem of malnutrition was placed in the hands of experts, privileging technical solutions. But scientific discourse did not only affect how hunger was defined and addressed, it also represented Africans within the language of progress and modernization.

Diana Wylie discusses another way in which famine is depoliticized through the existence of what she calls a “famine syndrome” in South Africa in the late 19th and early 20th centuries. During this “famine syndrome” era, the metaphor of a starving native population was used to avoid discussion of the loss of land and low wages that were contributing to widespread poverty and township squalor. Even African chiefs used the language of famine and of a starving people to appeal to their magistrates for assistance (Wylie 2001). As chiefs and communities became increasingly disheartened with paternalism and critical of the South African government,

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the language of famine faded out and turned into the era of the “malnutrition syndrome.”

Although the discussion of famine and the aid provided in times of emergency were highly paternalistic and government officials often treated Africans as children or victims, Wylie emphasizes that the hungry were never called ignorant (73). This is significant in relation to the development of the “malnutrition syndrome” as we will later see. In both “syndrome” eras, discussion of hunger allowed the government to ignore issues of political and social power and instead search for technical solutions to a medical and nutritional problem.

Particularly relevant to the discursive themes of malnutrition in the early 20th century is the depiction of famine as a natural disaster caused by the interactions between drought and other ecological disasters and overpopulation. This has been discussed since Malthus wrote about the application of natural limits to human populations and the idea of scarcity in the early 19th century. This framework implies that famine is a consequence of natural disaster which can be approached in two manners: 1) by giving out food aid to those who are vulnerable, and 2) by regarding the famine as a result of overpopulation and letting it take its course as a natural population check within a social Darwinian framework. The former was briefly touched on above within the “famine syndrome” in South Africa and occurs commonly in famine relief interventions today. Meanwhile, while the latter was rarely if ever followed in practice, this Social Darwinist29 idea appeared in scientific literature on hunger in the late 19th and early 20th centuries (Edkins 2000), especially with regard to fears of race deterioration (Wylie 2001).

As colonial scientists and officials in Africa moved their attention from famines to malnutrition, there was a shift in the causes, consequences, and solutions proposed, including a shift in scientific study. Famine elicited pity, aid, and attention on the part of governments

29 Social Darwinism is grounded in biological determinism, which is the notion that all of human nature is controlled exclusively by our DNA and is thus unchangeable.
because of its emergent nature; however, the discovery of widespread malnutrition throughout colonial Africa was seen as an invitation of expense. Recognition of the magnitude (and potential expense) of this issue in turn influenced preconceptions about African hunger. Preconceptions can strongly influence the starting points of scientific discussion, and as Wylie explains: “one unconscious starting point for discussion of African hunger was the idea of race deterioration” (Wylie 2001:161). With the results of nutritional surveys in colonial Africa showing high rates of “physical decay” and malnutrition, and it became clear that this was not an emergency situation that could be alleviated with famine aid, fears of racial degeneration began to build. In South Africa in the first half of the 20th century, “people commonly expressed fears of degeneration in terms of malnutrition” and malnutrition was considered one of the most important medical problems. At the same time, “the concept of physical degeneration was defined racially” and these racial conceptions were reflected in scientific knowledge of malnutrition (130,161).

**Labor, Nutrition, and Race Deterioration**

In colonial Africa, migrant labor-based industry, especially mining, was a major producer of knowledge regarding African malnutrition. The particular interest in Africans’ physical degeneration was strongly related to the importance of African labor to the colonial African economies. Wylie explains how “researchers talked candidly about the economy’s need for a strong and healthy labor force, and the economy had indeed shaped and funded their research agendas” (Wylie 2001:161). As mentioned earlier, the Chamber of Mines funded the South African Institute for Medical Research in 1913. Furthermore, F.W. Fox, a research biochemist at the South African Institute for Medical Research and a prominent nutrition researcher, wrote that the mining industry was the major catalyst for the interest in nutrition in South Africa (Fox
Although many people were concerned that Africans were too weak to work or grow their own food, migrant labor-based industries were especially concerned about the debilitation of their labor supply because they relied on African bodies to be fit enough to work. Here exists an intersection between the focus on bodies that the medicalization of malnutrition creates and the focus on African bodies as a labor source by industry.

Before severe malnutrition was recognized, the focus of the mining industry and scientific researchers was on the causation and prevention of scurvy among the miners. Some of the first funds allocated for research on malnutrition in Africa were given by the mining industry in South Africa. One of the main questions for the mines was whether malnutrition was a result of the miners’ diets at the mine, or whether it was a consequence of poor nutrition at the miners’ homes on the reserves (in South Africa). These reserves were created by industrial impetus in order to shore up a labor supply to work in the very powerful mines and the conditions on them were very crowded, impoverished, and unhealthy (Webster 1986). The industries’ threatened labor supply due to poor health in the early 1900s prompted industry to revisit the reserve system and determine what about the conditions from which the miners came was causing scurvy.

Industries based on migrant labor believed it was African culture and the rural environment that caused malnutrition. As Wylie explains, “Whether they fed their employees or not, they blamed them for their own health. Laborers on the Natal sugar fields were said to arrive from the Transkei ‘prone to scurvy’” (Wylie 2001:137). During this time when the employers blamed native diets for their poor health, the miners’ diets were monotonous and deficient at the

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30 One particularly important economic system introduced to, and developed within, colonial Africa was the migrant labor system. Migrant labor has led to tremendous health and ecological consequences throughout many regions of Africa, and has undoubtedly led to chronic malnutrition. However, some scholars have blamed not the migrant labor system itself, but the slow adaptation of Africans to the introduction of a money economy. In addition, some place the responsibility for choosing to enter the migrant labor system on the migrants themselves. As Webster explains, “This voluntaristic approach, by imputing freedom of choice to the actors, ignores history, or the lessons of history, for there is ample evidence that migrant labour in Rhodesia and South Africa was precipitated by coercive methods, such as land expropriation and the imposition of taxation” (Webster 1986:453).
mines. The mine rations consisted almost solely of mealie meal with the occasional portion of meat and often they were fed only one meal per day\textsuperscript{31} (132-133). Reflecting the preconceptions of the mining industry and their tendency to blame Africans for their own poor health, they explained that “mealie meal was the black miners’ staple ‘because of economic factors,’ as well as ‘the native habits’” (132). They also explained the lack of a breakfast meal was due to the black miners’ displeasure of waking up earlier and cultural preference against eating breakfast (131-132).

Despite the mines’ initial misgivings about improving the mine diets, medical research soon agitated for the need to include vitamins to prevent scurvy. Fox spent many years studying the biochemical causes of scurvy and confirmed that “the persistence of scurvy among African miners was a result not of their home diets, but of the ‘precarious’ nature of their ‘border line’ or ‘minimal’ mine rations, which left them ‘little or no margin of safety’…he concluded that ‘scurvy is not so much brought to the mines, but develops there as a result of the Native reactions to mine conditions’” (Wylie 2001:141-142). The mining industry did finally enact changes, and their food of choice to prevent scurvy was ultimately sorghum beer. This did drastically reduce the rates of scurvy (Wylie 2001); however, it became problematic over time because of social and health consequences of alcohol provision to laborers (Packard 1989; Mager 2004).\textsuperscript{32} Nevertheless some doctors continued to press for drastic changes to the mine diets and one researcher even advocated for standardized feeding of miners, which could be “more

\textsuperscript{31} Johnston describes the mine rations at “high class” firms in Kimberley and at the mines in the Rand as such: 2 lbs. corn meal per day; 1 lb. coffee per week, 1lb. beans per week, 1.25 lb. meat per week, 4 pints Kaffir beer per week, and lime juice where required or asked for. This diet still consists almost primarily of mealie meal but there is a bit more variety than mentioned in Wylie’s book. See: Johnston, H.H. 1904. The Conditions of Negro Labour in the South African Mines. Journal of the Royal African Society 3(11):231-237

\textsuperscript{32} Interestingly, South African mines had begun to prohibit or tax beer consumption in the late 19\textsuperscript{th} century due to presumed native alcoholism with effects on the nutritional content of native diets (Packard 1989). For more about the long and complicated history of alcohol provision to African laborers and narratives of African alcoholism see: Mager, Anne. 2004. ‘White liquor hits black livers’: meanings of excessive liquor consumption in South Africa in the second half of the twentieth century. Social Science & Medicine. 59(4):735-751
scientifically controlled” (Wylie 2001:152). Changes to the mine rations did occur gradually and unevenly\(^{33}\) (Wylie 2001). But as awareness of malnutrition shifted from scurvy (with an emphasis on vitamins) to severe malnutrition (with an emphasis on calories and protein), the conditions on the reserves were revisited.

Just as the mining industry initially resisted responsibility for the diets of their employees on the mines, they also resisted acknowledging their role in creating the deteriorating conditions on the reserves. One of the largest studies of the conditions on the reserves—and an important source of nutritional knowledge—was conducted by Fox and Back in the 1930s and commissioned by the Chamber of Mines “whose members were concerned about the decreasing health and physique of the labourers from the Transkei and Ciskei, as reflected in the high rejection rate of the volunteers who presented themselves at recruiting offices” (Webster 1986:459). The study was carried out in order to indicate what about the reserves from which the workers came caused such pervasive malnutrition. Fox and Back reported extensive poverty, malnutrition, and disease, and placed partial responsibility on the Chamber of Mines because of their low wages and disregard of their workers’ health. Predictably the Chamber locked up the report and it was not released to the public until 1942 when the authors gave it directly to Lord Hailey, a long-time colonial officer in Britain\(^{34}\) (Packard 1989). The mining industry was highly complicit in producing widespread malnutrition in South Africa but also served as a knowledge producer.

\(^{33}\) For example, Orenstein in 1936 describes the diets of miners on the Witwatersrand Gold Mines as consisting of the following: one main meal made up of meat stew with vegetables, meat, peanuts, potatoes and mealie meal. A morning meal was also made available which most miners ate. And each miner was provided with an additional three pounds of raw meat per week and two servings of kaffir beer per week. See: Orenstein, A.J. 1936. The Dietetics of Natives Employed on the Witwatersrand Gold Mines. \textit{Africa: Journal of the International African Institute} 9(2):218-226

\(^{34}\) The history of Lord Hailey and his role in redefining the British Empire’s imperial mission is a very interesting one. In particular he called for framing the imperial project as one of “promotion of native welfare,” thereby laying the groundwork for the notion of “development.” See: Wolton, Suke. 2000. \textit{Lord Hailey, the Colonial Office and the Politics of Race and Empire in the Second World War}. Basingstoke: Palgrave Macmillan.
Fear of race deterioration was not specific to industry, however. It was a predominant ideology guiding the interest of governments, doctors, and researchers in malnutrition. For example, fears of physical degeneration (of both whites and Africans) prompted Weston A. Price to conduct his worldwide study of traditional diets in the 1930s (Price 1945). It was also a matter of nationalism. Along with this sentiment, one object of nutrition research came to be the maintenance of South Africa (as well as other nations) as a civilized nation (Wylie 2001:127).

The discussion of race deterioration consisted of two main frameworks during the early-mid 20th century: 1) The evolutionary perspective in which the deterioration of black Africans was inevitable due to their biology, with extinction as a possible consequence; and 2) The cultural perspective in which Africans’ unscientific culture was cause for their deterioration and that education and scientifically-produced progress were necessary to prevent great losses (Wylie 2001:161-162). The presumed frame was also critical to the solutions proposed—both relied on scientific discourses, however, the range of technical solutions differed; the faith in the ability of technology to win the fight against nature was a major difference. On the other hand, some began to see “racial deterioration” of Africans as caused primarily by low wages and loss of land. But this was a minority view and was hard to voice because of the lack of government interest in addressing African poverty.

Evolutionary perspective

Intertwined with the evolutionary perspective on race deterioration were beliefs in the biologic/genetic basis of race and social Darwinism. At the turn of the 20th century, “many Europeans had justified their belief that the races were essentially different and unequal by citing

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35 To read more about the origins of racial classification and the history of its use in political and scientific discourse see: Hudson, 1996. From “Nation to "Race": The Origin of Racial Classification in Eighteenth-Century Thought. Eighteenth-Century Studies 29(3):247-264
biology…They delineated the boundaries of these racial categories by measuring bodies, and they fixed the resulting human typologies in time by declaring them impervious to historical change” (Wylie 2001:1). This justification and process is oftentimes referred to as scientific racism. The evolutionary and biological perspective of race influenced the way colonial scientists in Africa framed African malnutrition and the conclusions they drew from their research.

J. Bruce-Bays, a prominent South African physician in the early 20th century, was a proponent of social Darwinism. His writings reflect the evolutionary discourse of the time. In a 1909 article in the South African Journal of Science, he predicted that “‘unless the natives are able to acquire some immunity and power of resistance as a result of the survival of the fittest, the present native races of this colony may…in course of time become as extinct as the dodo’” (Wylie 2001:129). This severe prediction highlights the social Darwinist threads that continued to persist in African colonies during the early 1900s (even though the British dietary commission rejected all analogies to species extinction in 1904). Bruce-Bays also defined poverty in racial terms. According to him, Africans occupied the lower rungs of the ladder of civilization where the notion of poverty was not applicable and therefore African poverty did not exist (96). Because Bruce-Bays was a doctor and medical researcher, his preconceptions about race and its biological undertones influenced his medical research.

Shortly after the turn of the century, the influence of evolutionary theory and the idea that African bodies were fundamentally different from European bodies was starting to lose ground. Nutritional science played a major role in discrediting the belief in the biologic or genetic basis of race because biochemists presupposed that human bodies were all essentially the same (Wylie 2001). Wylie suggests that “Research into scurvy may have facilitated a shift from one way of
marking differences between races to another. In the early twentieth century, the idea lingered that the bodies of Africans and Europeans might be essentially different…[but] nutritional research was helping to propagate the idea of physiological equality” (142-143). On the other hand, Dubow explains this shift away from scientific racism as a result of the horror caused by Nazism and the presence of poor whites in South Africa that made it hard to justify the idea that only Africans had a “hereditary propensity to degenerate” (cited in Wylie 2001:7). A confluence of factors led to the discrediting of the evolutionary perspective of African degeneration, however, the argument that it was replaced by other explanations of African debility overlooks the continuation of the study of the genetic factor in the racial “causation” of malnutrition through the mid-19th century.

Despite discrediting race as a purely biologic construction, biomedical research into the racial (genetic and biologic) factors of malnutrition persisted. In 1940, Dr. A. B. Xuma, long-time medical officer and president of the African National Congress in South Africa, gave a speech “[with] an implicit reproach to those arguing that African physiques and physical needs were different from those of Europeans, a view held by many Africans as well as Europeans” (Wylie 2001:118). Evidently, the biologic basis of race was an idea still widely held in the 1940s. Indeed, with regard to childhood malnutrition, biological factors from breast milk to birth weight were suggested as having possible racial, and hence genetic, differences through the mid-20th century (Davies 1948; Brock and Autret 1952). In his study of traditional African diets in the 1930s, Price suggests the need to trace the racial history of the tribes he was studying to determine if their good health was due to race or to diet (Price 1945:133). Even in 1962, the notion of a genetic basis to malnutrition was still pervasive enough to warrant Hansen’s statement that there is “no material difference in birth weights of the four South African ‘races,’
adding that the retarded growth and weight of poor nonwhite children began after the age of six months.” He emphasizes that “the poverty of their families, not their genes, was taking its toll” (Wylie 2001:158). Despite the continued research on biologic or genetic causes of racial difference through the mid-century, the evolutionary perspective did lose much strength in the early 20th century.

While scientific racism largely died out, the social Darwinist bent was adopted by those who began to focus on culture rather than genes as a cause of African difference. Racial preconceptions continued to influence scientific research which in turn reflected (or negated) social and political issues. As Wylie explains:

…some nutritional researchers deployed evolutionary theory to argue that nothing need be done because race deterioration was a consequence of biological processes. This rationale, in turn, freed them from discussing issues of social and political power…Not all researchers subscribed to this evolutionary perspective, but many joined the social Darwinists in bypassing discussion of the role low wages or land loss played in African malnutrition. (2001:161)

The racialization of malnutrition persisted, although there was a shift from scientific racism to cultural racism,36 and this shift influenced the possibility of solutions, what these solutions entailed, and what they glossed over.

Cultural perspective: “diet as a measure of progress”

Once the notion of biological difference was discredited as a cause of African malnutrition, “racialist analyses of why Africans lived differently from Europeans came to focus less on the inherent limitations of their bodies and more on their unscientific culture” (Wylie 2001:162). That is, the emphasis shifted from genes to culture, and specifically on Africans’

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36 I use the term cultural racism to refer to the belief that Africans had an inferior (and unscientific) culture to that of whites and this made them vulnerable to malnutrition because of ignorance. The presumed failure of Africans to successfully adapt to modernity was also believed to lead to malnutrition. Cultural racism incorporated themes of scientific racism, including genetics, in addition to culture. For more about scientific racism in South Africa see: Dubow, S. 1995. Scientific Racism in Modern South Africa. Cambridge: University of Cambridge Press.
presumed lack of science. Indeed, the European faith in scientific progress was one of the principal sources of cultural racism. The terms backward, primitive, and ignorant all became associated with the “ignorance paradigm” related to the unscientific culture of Africans. Again, the shift in blame from genes to culture also had effects on the possibility of solutions to malnutrition. In this case, Africans were in need of education, civilization, and modernization through science. Moreover, if Africans resisted modern science, their poverty and hunger were blamed on their failure to “become scientific” and on their position as outcasts from modernity.

This shift towards cultural racism was not specific to Africa, and as the 20th century progressed, culture became the focus of anthropology and increasingly, public health throughout the metropole. By the 1920s, culture was spoken of as “something out there,” as a thing. “As culture became a thing, it also started doing things…culture shifted from a descriptive conceptual tool to an explanatory concept” (Trouillot 2003:102). And importantly, culture was something ascribed to “natives,” whether it was Native Americans within the study of American anthropology or native Africans in the case of colonial anthropology in Africa. As Trouillot describes, “…primitives became those who had no complexity, no class, no history that really mattered—because they had culture. Better still, each group had a single culture whose boundaries were thought to be self-evident” (102). Culture became not only something to blame (for hunger, poverty, etc.) but also the only thing about a group that people acknowledged and focused on.

Moreover, this shift from genes to culture had a major effect on how race relations were approached in Africa during this time. If Africans could be educated and civilized and it was indeed not inevitable that their “races would go extinct” (as previously thought) then it was up to whites to inform them of how to live. Diet, as a symbol of society, was thought to be reflective of
culture and thus one obvious aspect by which Africans could be civilized and their progress measured. As African malnutrition was blamed increasingly on African minds and culture over bodies and genes, Africans were constructed as lazy and ignorant. For example, Wylie refers to Latsky, a South African physician, who believed that the “‘ignorance of the Native mothers especially is appalling’” and saw the long term goal as ‘mak[ing] nutritionally sophisticated cooks out of African women and progressive farmers out of African men’” (Wylie 2001:84). African malnutrition became an emblem of backwardness and proof of cultural incompetence, while diet served as a measure of progress.

Hunger was used as a pretext to speak of other issues considered more fundamental (or politically permissible) by colonial officials. As explained above, Wylie uses the term “malnutrition syndrome” to explain the focus on malnutrition in colonial South Africa at the expense of poverty. The malnutrition syndrome reduced the complex causes of poverty into a single, medicalized, dimension discussed in technical terms. Whereas Bruce-Bays had discredited the idea of African poverty by claiming that Africans were not on the same level of civilization as Europeans, others with a less evolutionary perspective could reframe the issue of poverty as one of malnutrition and again skirt the issue of low wages and land loss among Africans. Like the earlier “famine syndrome,” this resulted in silence around African poverty. Africans needed to be taught how to practice proper (i.e. scientific) agriculture, how to eat healthy, and how to feed their children, because they were lazy, inefficient and unintelligent. Their inability to feed themselves adequately was just one manifestation of this “fact.”

It was not only the focus on African culture through diet that was highlighted in scientific literature; rather diet remained a culturally-embedded concept for the researchers themselves and this was reflected in the production of nutritional knowledge. As Wylie explains: “Nutritional
data often reveal more about the researchers and their social context than they reveal about the hungry themselves” (Wylie 2001:13). We have seen this in the way in which traditional diets were framed within the scientific discourse; however, the cultural importance of diet is also apparent in the nutritional knowledge produced by the metropole. The emphasis of Western nutrition experts on the centrality of meat to a healthy diet is a salient example of the embeddness of science in culture. The importance given to meat in diets in the metropoles was both because of the nutritive power of protein and also more symbolically because of meat’s association with power and wealth. In a quote from the turn of the century, French medical professors Rouget and Dopter sum up: “Herbivores seem destined to serve as the grazing ground of carnivores” (cited in Neill 2009:7). This statement was made on the basis that “meat-eating Europeans became conquerors while vegetable-eating peoples were easily overrun” (7). Even for the few experts who advocated that vegetarianism could indeed be healthy, it was necessary to eat dairy and eggs in order to ensure that they would remain “modern.” As Armand Gautier explains in his nutritional guide in early 20th-century France, “this diet could create ‘modern’ Europeans: it would lead to ‘the formation and the education of races who are gentle, intelligent, artistic yet prolific, vigorous and active’” (cited in Neill 2009:8).

Furthermore, the perceived relationship between modernity, class status, and diet in the metropole influenced discourses of colonial nutrition overseas; colonial attitudes about African diets often paralleled attitudes toward peasants’ diets at home. As Neill explains, French ideas about African foods were rooted in early modern European cultural assumptions:

The dramatic increase in agricultural productivity solved Europe’s famine problems, and what one ate, rather than how much, became the central preoccupation. The middle classes saw diet as a means to measure the relative progress of their societies—whether in terms of urban versus rural France, or the French metropole versus the tropical colonies—and began to scorn peasants’ traditional meals as backwards… (Neill 2009:13)
As Stoler and Cooper suggest, the history of colonization cannot be analyzed without investigating the colonizers and the metropole themselves. This example shows how prejudices about others became incorporated into nutritional advice as scientific fact. Science was used to justify and reinforce the underlying ideologies of colonialism itself. Food was just one of the many forms through which Europeans tried to impose their superiority and hegemony over the African environment and its people—enshrouded in the discourse of science and modernity.

Nutrition research in Africa, as elsewhere, was not just a form of study but was an intervention, even when not couched in those terms. Nutrition science was not utilized merely to understand and improve the way African people ate; rather, a basic tenet of nutrition science at this time was, as Moore and Vaughan (1994) point out, “to measure well-being in terms of diet.” Diet was believed to be easily quantifiable and translatable into a measure of well-being, culture, and progress. Audrey Richards, in an anthropological study of changes occurring in the Bemba tribe in Northern Rhodesia during the 1930s, took careful notes of households’ food intake, what crops they grew, how they prepared their food, who they shared with, what the staples were, etc. (Moore and Vaughan 1994). She believed that diet was a gauge of well-being and that this was something that could be measured and calculated, despite the fact that so much of her research was qualitative. This impulse to quantify diet through food consumption relates to the study by Brock and Autret in 1952, but in this case, Richards was not trying to measure only nutritional status but was assessing “well-being” on the basis of diet. Diet, at the time, was a tool to measure (and to govern) the changes occurring among Africans as they were confronted by aspects of modern civilization—in Richards’ case, migrant labor and modern agriculture.

The interest in measuring the well-being of Africans was associated in part with the common belief that the African race was degenerating due to confrontation with, and ill
adaptation to, modern civilization. In “‘The Healthy Reserve’ and the ‘Dressed Native,’” Packard describes the idea of cultural racism in terms of what he calls the problem of the “dressed native.” By this he means how “…both liberal and conservative whites came to regard the social problems experienced by Africans entering colonial society as being, in one way or another, a product of the Africans’ maladjustment to the ways of Western civilization” (Packard 1989:688). This framework led to placing the blame on Africans who could not, or did not want to, adjust to civilization as the reason for widespread poverty and malnutrition in colonial Africa. Moreover, this perception influenced biomedical research at the time. Diet was just one way in which Africans were seen as incapable of integrating into civilization and learning the lessons of modern science. As exemplified in Richards’ research, nutrition became one means of “measuring progress” (towards modernity and civilization).

Socioeconomic perspective: The role of poverty

Not only was malnutrition racially defined during this period of fear about race deterioration, but the focus on malnutrition had a diversionary effect on the discussion of poverty and political causes of malnutrition. It “reduce[d] the complex causes and attributes of poverty to

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37 Webster also describes similar beliefs in South Africa, in which: “…the indigenous societies were in such an original state of underdevelopment that when advanced technology and expertise were brought by settlers, they were unable to adapt and have remained in a state of backwardness, due to ignorance, conservatism, and lack of education, etcetera” (Webster 1986:452). In the context of South Africa these beliefs allowed whites to legitimize the myth of the “healthy reserves” constructed to segregate black Africans in apartheid South Africa.

38 Packard emphasizes the role of this notion in medical discourse, in particular, because as he says: “white medical authorities had considerable influence on the development of popular thinking among whites about the status of Africans in South African society and in the development and persistence of the dual stereo-types of the healthy reserve and the dressed native” (Packard 1989:689).

39 On the other hand, as we saw above in his study of traditional diets, Price saw modern civilization as the problem not the solution to degeneration. He believed modern civilization to be the cause of poor nutrition and health and he believed in the primitive wisdom of the native tribes to maintain good health. Price says: “The native African is not only chafing under the taxation by foreign overlords, but is conscious that his race becomes blighted when met by our modern civilization. I found them well aware of the fact that those of their tribes who had adopted European methods of living and foods not only developed rampant tooth decay, but other degenerative processes” (Price 1945:160). He still blamed the degeneration of “modernized” Africans on their adoption of civilized practices, similar to the idea of the “dressed native” that Packard discusses; however, takes a twist on the predominant notion of the dressed native in the early 1930s and instead blames modern civilization itself rather than solely Africans’ inability to adopt these practices.
a single dimension whose cure can be framed in narrowly technical terms” (Wylie 2001:164).

Despite this tendency toward medicalization, however, Wylie also notes that:

[as researchers] broadened the scope of their search for a medical definitions of 
*deterioration*, they were giving the imprimatur of scientific authority to discussions of 
social conditions. By the early 1940s nutritional research was not only proving 
correlations between poverty and malnutrition, it was helping to bring the concept of 
African poverty in to public discourse. Science was validating inquiries that had a 
political trajectory. (144)

The medicalization of malnutrition enabled politicians to reframe the issue of poverty in terms of 
malnutrition; however, at the same time, the diagnosis and treatment of malnutrition did not 
remain within the confines of the clinic and doctors began to recognize the role of 
socioeconomic factors in the production of hunger.

Despite the widespread prominence of the ignorance paradigm to explain the prevalence 
of African malnutrition, some researchers during the early-mid 1950s did acknowledge the role 
of low wages, loss of land, and poverty in causing malnutrition. In the mid-1950s, Hansen, a 
prominent South African researcher,

found economic status and protein-calorie malnutrition (PCM) ‘very closely linked,’ and concluded that ‘adequacy of income and the capacity to earn such an income’ were basic to improved child health. He explicitly rejected maternal ignorance as the cause of illness: ‘even if a mother is adequately educated in nutritional and other principles, she has to have sufficient income to buy protective foods to maintain the normal growth and health of her children. (cited in Wylie 2001:158)

Hansen was by no means the only researcher to highlight the role of poverty in causing 
malnutrition, but he was one of the most explicit.\(^40\) Brock and Autret mention poverty (though 
minimally) in their 1952 report, as do Fox and Back in their mine-commissioned study of the 
reserves in the 1930s. However, despite Hansen and Brock’s acknowledgement of poverty as a 

\(^{40}\) There were other researchers who studied the relationship between poverty and malnutrition, including Edward Batson who conducted a socioeconomic study of the Cape peninsula in the 1950s and found a positive correlation between poverty and malnutrition (Wylie 2001:150). However, for the most part these researchers were less specifically focused on biomedical research as those above.
cause of malnutrition, they did not bring politics into their analysis: “Rather than target issues of wage rates and land distribution, Hansen wrote that South Africa’s industrial revolution was responsible for its health problems” (Wylie 2001:158). This point needs to be problematized, however, because Brock and Hansen both tried making political arguments during their careers and both were reprimanded by politicians and institutions; Hansen was labeled a Communist by the Afrikaans press and Brock was dropped from the Medical Research Council (Wylie 2001). This prompted both researchers to refrain from involvement in politics for most of their careers. Sometimes despite researchers’ intentions, even as nutritional research was “helping to bring the concept of African poverty in to public discourse,” as Wylie claims, it was doing so in an apolitical way. And despite Hansen’s research and the acknowledgement of poverty throughout the field, “the ignorance paradigm remained a formidable opponent of socioeconomic arguments” (159).

The power of cultural racism was reflected in the debate over not just whether African poverty contributed to malnutrition, but whether African poverty existed at all. The struggle between cultural and socioeconomic roots of malnutrition continued throughout the rest of the century and Wylie sums up the conflict as such:

The weight of explaining malnutrition thereby fell either on wage rates or on African culture. In the former case, there were unavoidable political implications. In the latter case, eating poorly could be read as a sign that time-honoured African habits were not up to the challenge of modernity. If this interpretation were true, then science in general, and nutrition in particular, were among the greatest gifts that the imperial powers had to give to the colonized (146).

Although there was increasing evidence pointing towards the former case, there remained strong political, institutional, and social pressure pushing for the latter interpretation. The latter explanation became highlighted in the language surrounding the promise of scientific solutions.
Conclusion

This chapter has highlighted some of the major themes in the biomedical literature on malnutrition in the 20th century. The history of nutrition in Africa is often left out of the scientific literature with effects on how hunger has been framed as an African problem and how the blame has been placed on Africans. In addition, the scientific study of traditional diet highlights the role of science in validating, negating, and producing (as a category) local knowledge, as well as the implications of the conflict between local and expert knowledge. Finally, we discussed how the scientific study of African malnutrition, as well as the frameworks utilized, intersected with anxieties of race deterioration. The racialization of malnutrition was a central theme of the scientific literature throughout the early-mid 20th century, whether the focus was on African physiognomy or culture. The association of malnutrition with race influenced the advance of science, shaped prevention and treatment interventions (or lack thereof), perpetuated attributions to race (like poor diets) that were really due to social factors, and (re)produced representations of Africans as primitive and ignorant. As we will see, the language of the ignorance paradigm and cultural explanations for malnutrition broadened beyond the focus on nutrition and medicine; the “concern about race deterioration spilled over to the land, and in the process provided a basis for the growing ideology of African ignorance” (Wylie 2001:162).
“...because African culture was rural, the cure for African problems like hunger lay in rural areas” – Wylie (2001:200)

Malnutrition was never regarded solely as a medical issue and many researchers, both inside and outside of the medical community, related the problem of malnutrition to agricultural production and environmental degradation. In the mine-commissioned study of the 1930s by Fox and Back, they emphasized that “the nutritional background [of the labour force] is of fundamental importance...In its turn, as it is now being widely recognised in other parts of the world, the nutritional background depends upon the agricultural situation” (cited in Webster 1986:459). Likewise, Maggie Black explains in her book on the history of UNICEF (United Nations Children’s Fund), that: “A new approach adopted by Unicef in the 1960s and 1970s—‘applied nutrition’—was based on small-scale agriculture, livestock-raising and horticulture” (Black 1996:65). The shift in UNICEF’s approach was in response to a change in the understanding of the etiology of chronic malnutrition in which not just protein-deficiency, but lack of calories was to blame. This suggested that lack of food was at fault, leading to a focus on food production as the problem and solution for malnutrition.

It was not only a realization of the importance of food production to nutrition that prompted interest in African agriculture; rather, starting in the early 20th century there were
increasing fears of environmental degradation by officials and scientists (Wylie 2001). For example, in South Africa, Wylie explains that “most analyses of African debility could be traced back to the assumption that the land in the reserves was dying,” and she quotes Kark, a south African researcher, as saying that “‘all our efforts to combat malnutrition were doomed to failure if soil erosion continued to devastate the land’” (145-146). These fears of environmental degradation became primarily focused on African agricultural practices and reflected a shift of the narrative of degeneration in South Africa from “concern with deterioration of the people to the deterioration of the land” (148).

Finally, in parallel with the biologization of food, there had been increasing technologization of agriculture in the metropoles during the 19th and early 20th centuries which began to spread to the colonies. The conflict between scientific agriculture and local agricultural practices became associated with the discussion of African malnutrition. The limited adoption of agricultural technologies by many African farmers suggested that this was a cause for the land degradation and poor production of African agriculture. Scientific agriculture become the hailed solution; indeed, it was thought that “without scientific farming and feeding, there would be no African future” (Wylie 2001:178). Dubow explains that underlying the development of scientific agriculture was the fundamental idea that productivity was a benchmark of progress.\(^{42}\) Progressives advocated for a modern, scientifically based approach to

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\(^{41}\) For the purposes of this thesis, I use scientific agriculture to refer to the practice of scientific technology-based and research-informed agriculture. This often includes the practice of mono-cropping and relies upon technical inputs such as fertilizer and pesticides. Scientific agriculture, in general, focuses on high-yield, high productivity agricultural systems which emphasize productivity. These practices have often become incorporated into industrial agriculture.

\(^{42}\) The emphasis on low food production as a primary element of malnutrition, and the role of scientific agriculture as the solution to increased productivity, is still critically important in scientific policy papers about malnutrition in Africa. A World Bank Research Working Paper in 2005 explains: “Several factors impacting food production, such as primitive agriculture practices, recurrent droughts, and long lasting civil wars, contribute to the high prevalence of malnutrition in Ethiopia. It is worth noting, however, that some of the regions with the highest rates of malnutrition are also the food surplus regions of the country [emphasis added]” (Silva 2005:7). The factors listed do not include
all aspects of rural development, environmental reform, and conservation, which involved much state intervention and points to the relationship between science and politics in colonial Africa.

For example, in the early 20th century in colonial South Africa, there was a major state-led push for scientific agriculture. The state enforced policies and enacted programs to increase the technical competence of Boer farmers who were previously seen as primitive and lazy cultivators. The success of Boer adoption of scientific agricultural methods was seen as proof of the transformative and progressive capacity of a reawakened British imperialism/civilization and it also represented the effectiveness of state intervention (Dubow 2006). The achievements of scientific agriculture were viewed in the framework of white (British and Boer) South Africans’ “special” scientific knowledge of, and control over, a hostile African environment. Once colonial officials adopted the view that Africans could be civilized and that science was the means, state interventions to enforce scientific farming methods for African farmers became increasingly common.

During this period, African malnutrition was commonly blamed on poor farming techniques and primitive land use strategies. Therefore much of the policies aimed at alleviating malnutrition focused on “betterment” schemes which taught Africans how to use their land efficiently and scientifically. Interventions by researchers and philanthropists that aimed to increase food production by increasing “scientific” use of the land were often directed at increasing the self-sufficiency of Africans, especially in the second half of the 20th century. This had the consequence of neglecting the economic causes of African poverty and proved especially problematic in apartheid South Africa where rhetoric of self-sufficiency assisted the segregation
and neglect of black Africans. The following section will focus on examples of widespread African “land issues” taken up for study by scientists.

**Overstocking**

At the same time that biomedical researchers were promoting milk protein as the cure for malnutrition, and UNICEF began providing skim milk as aid to Africans, officials within Africa began a campaign to increase milk consumption. In South Africa, among other regions of Africa, Africans kept cows in high densities as a source of income but rarely used their milk. Colonial and European officials considered this to be “overstocking.” Officials harped on this practice as evidence of the ignorance of Africans about their own diets and health and as a failure to use their land efficiently—as Rodseth explained in 1946: “Mostly and fundamentally, the causes [of African hunger] are overstocking combined with ignorance in regard to how to live” and Latksy also claimed that “the root problem [was] overstocking with scrub cattle” (Wylie 2001:127).

There were urgent pushes from the government to force Africans to reduce overstocking of their cows by milking the cows and using them for meat (Wylie 2001). David Tapson highlights the rhetoric surrounding destocking interventions when he says: “Thorrington-Smith et al. (1978:93) describe KwaZulu as areas where tribal/traditional men ‘pumula’ (rest), where women scratch at the soil, where ‘wealth’ in the form of cattle accumulates to the point of bringing the veld to a state near disaster ...” (Tapson 1991:1). In the early 1980s the KwaZulu Department of Agriculture and Buthelezi Commission released documents that claimed overstocking leads to a tragic waste of resources and that “attempts should be made to change the attitude of the tribal people towards cattle so that they are seen as a productive resource rather than as a store of
Wealth’’ (Tapson 1991:2). This assertion of wasted resources and productive capacity resulting from African land use practices has continued throughout the past century.

A more recent United States Agency for International Development (USAID) report on agricultural performance in Africa by Roth and Haase employs similar themes, emphasizing efficiency while critiquing communal land practices. Communal land practices include the practice of cattle rearing that officials and scientists considered overstocking. The report states:

Agricultural performance can be also be conceptualized in two dimensions: (1) productivity and investment impacts; and (2) labor absorption, income distribution and stability. The former and focus of this paper emphasizes efficiency objectives although not entirely...labor absorption and stability may also constitute efficient outcomes. (Roth and Haase 1998:2)

Efficiency is a prominent theme in policy discussions of land use and it also relates directly to the notion of productivity. As Dubow explained with regard to South Africa back in the early 20th century, the development of scientific agriculture was based on the belief in productivity as an index of progress. The USAID article highlights the endurance of this belief in agricultural science and policy today. The authors also emphasize the unsustainable traditional practices of livestock farming in contrast to the efficiency and productivity of scientific agriculture:

“Population increase does not explain the observed degradation. It is rather a product of long term sustained injudicious land use activities from the time the land was still sparsely settled” (Roth and Haase 1998:12 referencing Kakembo 1998). The solution is proclaimed to be privatization of pastureland and more quantitative and technical farming practices in order to increase the efficiency and productivity of food production and decrease land degradation.

Despite decades of scientists and officials condemning overstocking, there has not been consensus in the literature over the issue. The 1930s report by Fox and Back in South Africa, found that land degradation due to overstocking in the Transkei was due to increasing numbers
Officials had encouraged peasants to pursue wool production but the result was that sheep outnumbered cattle three to one with consequent disastrous effects on land fertility and nutrition (Webster 1986). In David Tapson’s (1991) analysis of the claims of pervasive land degradation made by officials in order to support interventions to reduce overstocking in KwaZulu, he concludes that these claims are exaggerated and that destocking poses a greater threat to the Zulu people through loss of precious wealth. Likewise, a study by Boonzaier et al. explains that “traditional communal farming in southern Africa has often been described as unproductive and directly responsible for regional poverty and vegetation degradation [however] each aspect of this argument rests on a set of unchallenged assumptions concerning the nature of communal farming” (Boonzaier 1990:77). The unchallenged assumptions advocated by agricultural experts are based on a narrow explanatory framework comprised of biology, statistics, and environmental science without regard to the social and cultural significance and resilience of communal farming systems. The above authors suggest that traditional practices are logical and pragmatic adaptations to unique conditions.

43 I use the term resilience in reference to “resilience thinking” as it relates to sustainability and conservation, in this case in agricultural science and ecology. Resilience thinking critiques the ideas of efficiency and optimization in technocratic and expert solutions to environmental degradation (and hunger). As Brian Walker explains: “Many of the world’s leaders and technocrats say…The key to sustainability…is through being more efficient; extract more from less, employ our technological mastery to bridge the growing gap between our needs and available supplies—optimize our way out of the corner we’ve painted ourselves into.” However, “optimization (in the sense of maximizing efficiency through tight control) is a large part of the problem, not the solution. There is no such thing as an optimal state of a dynamic system.” And “when we aim to increase the efficiency of returns from some part of the system by trying to tightly control it, we usually do so at the cost of the system's resilience” (141). See: Walker, Brian. 2006. In Resilience Thinking: Sustaining People and Ecosystems in a Changing World. Washington D.C.: Island Press.

44 The problems with the traditional high stocking of cattle on the pasturelands have been deemed by scientists to be an example of the “tragedy of the commons.” There are many issues with the assertion that traditional land practices cause greater environmental degradation than agricultural practices based on greater capital investment and technology. This discussion is too large for this paper, but one key acknowledgement is that the modern theory of capitalism as applied to the environment does not take into account externalities to the system in question. Therefore, although traditional systems may degrade the land and cause soil erosion, these impacts are immediately tangible and though detrimental, are acknowledged. On the other hand, externalities such as pollution, global warming, and loss of biodiversity caused by modern agriculture are less directly observable and correlated with the system in question. Both are examples of tragedy of the commons but on different scales—one local, one global. Governance of the commons through a top-down command and control approach has failed many times, however, it
The dismissal of local knowledge and blame on African culture for environmental unsustainability in Africa have been prominent themes throughout the past century. The continued opposition of local and scientific knowledge in scientific and policy discourse creates the idea that science is needed to solve the issues that “primitive” local knowledge has created. This again points to the conflict between expert and local knowledge; in this case, the experts—agricultural scientists—have advised local people about tropical agriculture practices since the 19th century, despite the total lack of tropical land conditions in the metropole.

The *Citemene System*

Another farming practice criticized by politicians and experts has been the *citemene* system. The *citemene* system of agriculture relies upon slash and burn techniques which create fertile plots of land out of the harsh tropical soils. This land is used primarily for subsistence agriculture and for short periods of time before letting it lay fallow. According to Sugiyama, in the 1980s the *citemene* system consisted of the following:

First, men climb trees to lop off branches, leaving the trunks uncut. When these branches are adequately dry, women carry the branches to the center of the clearing and pile them concentrically. The pile is burned just before the rainy season starts. In the field, crop rotation is maintained as follows. In the first year, finger millet, the main staple food crop of the Bemba, is harvested. In the second year, groundnuts and Bambara nuts are planted. In the third and fourth years, cassava, which was planted in the first year, is harvested. In the fifth year, small mounds are made in part of the *citemene* field for planting and harvesting beans, after which the field will be abandoned and left fallow. (Sugiyama 2007:93)

Despite its evident complexity, colonial researchers and officials considered this system to be very primitive and they suggested, and even forced, communities to stop cutting down trees and

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*is still often promoted by technocrats. Nobel laureate Elinor Ostrom emphasizes the notion that we can govern the commons through investing in trust and in collective local action in cooperation with policymakers. See: Ostrom, Elinor. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.*
to shift to growing cassava and staple crops on tilled land. The focus on this farming method as backwards and primitive appears similar to the obsession with overstocking. Moreover, the *citemene* system was seen to symbolize the cultural identity of a primitive African people, now under threat from colonial capitalism and labor migration. However, it was seen not only as symbolic of failed adaption to modern civilization, but was considered to have low productivity and to cause land degradation. In addition, the men were accused of idleness and laziness because of their specific time-limited role in the system. Taken together, these presumed deficiencies of the *citemene* system led many researchers to blame the prevalence of malnutrition on this practice, as well as on the local people’s resistance to adopting scientific agricultural techniques.

Again, conflicts between expert and local knowledge are not just epistemological conflicts; rather, the faith placed in technology and scientific solutions has practical and concrete effects. In Zambia, for example, the shift from *citemene* to more intensive agricultural practices as enforced by officials has resulted in widespread land degradation, soil erosion, and soil acidification. As Zambian historian and advocate Shimwaayi Muntemba dishearteningly explains about what happened: “‘Without bothering to find out why the farmers used the *Citemene* system…the colonialists dismissed it as backwards and destructive. They promoted chemical fertilizers which acidified the soil. Now that they have left we must try and regenerate the soil’” (cited in Katumba 1991:12). This is particularly important because tropical soils are very fragile, which is something that traditional methods adapt to and overcome. Muntemba emphasizes that “‘Indigenous methods must be studied, not dismissed…only then can new techniques be introduced to ensure sustained agriculture’” (12). She highlights the consequences of colonists’ dismissal of local knowledge in light of “superior” scientific knowledge.
The dismissal of the wisdom of local agricultural practices parallels the dismissal of traditional diets highlighted in chapter 2. This is especially true because diet and agriculture are tightly linked as shifts in crop variety invariably coincide with changes in agricultural systems. The conversion to scientific agriculture necessitated a shift from the cultivation of diverse native cereal crops—such as millet—to cassava and corn. The example of cassava will be discussed at length below, but first it is important to contextualize the adoption of cassava cultivation among the Bemba people (one group of people who practiced this elaborate system of *citemene* farming).

In order to avoid stripping the Bemba people of agency, as well as to provide historical context for the conflict between local and “expert” agricultural knowledge, it is critical to assess both their resistance and adaptation to agricultural practices. The practice of the *citemene* system shifted during the 1980s when market liberalization and structural readjustment programs encouraged the transition to farming hybrid corn using a system the Bemba called *Faamu*. This consists of creating semi-permanent plots of land and using fertilizers to grow only hybrid corn. Although officials incentivized and enforced the adoption of these techniques, the Bemba resisted and incorporated this system into their already established *citemene* system. The corn provided access to cash income, while the crops produced through *citemene* were used for subsistence food. This was viable only until the subsidies provided for corn as a cash crop ran out and the Bemba returned to the *citemene* system almost exclusively (Sugiyama 2009). This example illustrates the resilience of the local people. By retaining the knowledge and practice of local agricultural techniques, the Bemba’s livelihoods remained intact when external forces reduced the viability of the imposed agricultural systems.
Cassava

The pressure to adopt scientific agricultural systems instead of traditional practices like the *citemene* system also contributed to the shift to cassava as a staple crop. The cause for increasing reliance on cassava throughout Africa over the 20th century differs by region but much of the impetus behind this reliance was on the part of government enforcement. As we will see in the following chapter, the increase in cassava production and consumption is especially important in light of the research done on cassava’s low nutritional value as a determinant of kwashiorkor—in particular its extremely low levels of protein. The overreliance on cassava as a staple crop has been suggested to cause kwashiorkor and other forms of malnutrition (Kamalu 1993).

Cassava production (and consumption) accelerated in the 1920s at the instigation of colonial officials who enforced its cultivation as a famine crop. This was at the expense of much more nutritionally-dense foods like sorghum and beans. Officials highlighted the drought-resistance of cassava as a reason for its cultivation; however, officials also saw cassava as symbolic of modernity and millet as primitive. Scientists and officials claimed that cassava required very little labor; however, it actually required much more labor on the part of women, but reduced the labor of men (Moore and Vaughan 1994). Trees did not need to be cut, which was men’s primary role, however, cassava requires a lot of processing, which was almost exclusively female work. Claims regarding the low male labor requirements of cassava are complicated by the fact that colonial officials were pushing for the farming of cassava in the Bemba territory at the same time that industrial employers were seeking out more men to work as migrant laborers. Indeed during this time, migrant labor increased significantly in the Bemba

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45 Cassava was also locally grown as a famine food and it was increasingly cultivated by local people as a response to famines, increased land degradation, or in response to relocation to lands with very poor soils.
territory (Moore and Vaughan 1994). This calls into question political motives of the promotion of cassava production and the relationship between science and politics. The result of official encouragement—and more coercive enforcement—of cassava production was that cassava quickly became a staple crop throughout Africa.

In Moore and Vaughan’s (1994) study of the Bemba people in the 1980s, they discuss the impacts of increased scientific agriculture on nutritional status. They found that commercialization had increased and that nutritional status had decreased in children. They suggest this was largely due to the fact that women has less time to prepare food for their children, especially weaning foods, as a result of increased cassava cultivation workload and the absence of men in the household. Deficient weaning foods are a particularly important factor in the development of severe childhood malnutrition and were a popular target for kwashiorkor researchers in the early and mid-20th century. It is therefore highly significant that the quality of weaning foods may have continually decreased throughout this time because of a shift to cash crops and a monetized economy.

Alongside the commercialization and monetization of the economy, crop diversity decreased. In particular, cassava and hybrid maize cultivation increased while cereal crops (like millet) and relish crops (like fruits and vegetables) decreased, reflecting a trend toward less diverse diets throughout Africa, an emerging concern of malnutrition researchers in the early 20th century. There were many factors leading to the de-diversification of African diets in the 20th century, but changes in agricultural practices were a major reason. Webster describes these changes in the context of South Africa’s rural areas:

there was a change from self-sufficiency in local foods to the commercialisation of production...to the direct detriment of the mass of the population...The early pre-colonial diet of maize, meat, milk, mfino (or wild spinach), and home-made beer was, [Fox and Back] judged, both nutritious and satisfying. However, by the 1930s, meat and milk
supplies were sporadic, and maize had emerged as the main item of diet. The spinach, which is rich in mineral salts (calcium and iron, as well as vitamins A and C), pumpkin (with its vitamin A and small amounts of C), ground nuts (with their high food value), and such items as beans and mushrooms, were being eaten in smaller quantities. (Webster 1986:460)

The relationship between cultivation practices and dietary diversity is just one way in which agricultural policies can affect nutritional status. This example shows how interventions based on agricultural science influence the prevalence of malnutrition.

It was not just through enforcement of cassava cultivation that colonial officials shaped the diets of Africans. As mentioned in chapter 1, colonists sought to assert their superiority over Africans, at least in part, through the retention of their diets from home. This led to the labeling of indigenous foodstuffs as inferior to European foodstuffs even when doctors acknowledged the nutritional superiority of the indigenous products (Neill 2009). Colonists brought over many crops and food practices from home which they encouraged or forced Africans to adopt. As one French colonial doctor describes, “‘in these countries with the harsh climate and primitive manners, our duty as the civilizers consists entirely in bringing, in the material as well as the moral realm, a little more each day of cherished France’” (cited in Neill 2009:11). The incorporation of European products into the African environment was more of a symbolic assertion of cultural superiority than a statement of nutritional scientific fact. For example, in the French colony of Upper Volta (now Burkina Faso), European vegetables were cultivated at the expense of native vegetables, which the colonists saw as “strange and savage” (Freidberg 2003). As one Madagascar colonial journal stated: “‘The cultivation of vegetables in hot countries is indispensable for the hygiene of Europeans…one of our biggest preoccupations when we move to the colonies is to introduce and grow at least some of the many and excellent vegetables that we possess in our temperate country’” (449). In many parts of Africa the cultivation of maize
was even more aggressively promoted than cassava, leading to the displacement of native millet as the staple crop (Kepkiewicz 2010). This was due to European preference of, and familiarity with maize (relative to native grains and cassava), as well as to its exportability. European food preferences significantly influenced the agricultural and dietary patterns of Africans, not only by the promotion and enforcement of specific crop production, but also through the appropriation of “European foods” by Africans themselves.

Although agriculture has been of central interest to nutritional scientists from colonial times to today, there are other ways in which malnutrition has been framed through an ecological perspective. Another such framework has been the relationship between malnutrition and climate.

**Malnutrition and Climate**

Despite the fact that one of the first descriptions of kwashiorkor was made among factory workers in urban England, and it was “discovered” in non-tropical South Africa, severe nutritional syndromes (characterized by PEM), have been labeled tropical diseases since the early 20th century. The definition of a tropical disease restricts these diseases to warmer climates; however these nutritional syndromes occur throughout the world wherever malnutrition and undernutrition exist. The definition of tropical medicine has shifted over the past century to a definition based on diseases of poverty; however, this does not negate the association that the nomenclature maintains with climate. Although climate does influence how disease manifests,

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46 For example, the mission of The American Society of Tropical Medicine and Hygiene is the following: “…to promote global health through the prevention and control of infectious and other diseases that disproportionately affect the global poor.” See: ASTMH. “Who We Are.” Accessed 4/21/12 at: <http://www.astmh.org/About_ASTMH.htm>
especially regarding co-occurring infections with malnutrition, it does not determine who will become malnourished—poverty and inequality do.

Recently, with the emergence of climate change and an explosion of research into the effects of climate change on health, there is renewed focus on the relationship between climate and hunger. Experts predict that hunger will increase throughout much of Africa as the climate gets drier and famines become more frequent and/or severe. The discussion of famine as a natural disaster precipitated by climate, not by political and social structures and entitlement frameworks, is still rife. In a recent U.S. Geological Survey article on the topic of climate change and hunger, Jessica Robertson states: “Scientists are looking at clues and changes in nature to understand the impacts of global warming. In Africa, impacts are seen across the landscape — on farms and even in humans. By starting with science, well-informed decisions can be made to help Africa as it faces drought, famine, and health concerns” (Robertson 2011). This explicitly underscores the faith in science to solve the problem of hunger in Africa. Clearly climate change will affect agriculture, but this will be a problem worldwide and focusing on climate and hunger in Africa continues to neglect discussion of entitlement and structural inequalities that need much more attention in discussions of hunger in this region.

Although previous sections have highlighted some of the prevalent themes in research on malnutrition over the past century and the way that malnutrition has been framed in the scientific discourse, I do not wish to overlook more complex, multifactorial understandings of malnutrition. Because of this, I will conclude with a discussion of some current and historical

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47 Almost three decades ago Amartya Sen proposed the “entitlement approach” to thinking about the causation of starvation and famine, which focuses on ownership and exchange, not on food supply. He defines entitlements as, “a set of alternative commodity bundles that a person can command in society using the totality of rights and opportunities that he or she faces” (1984:497). He has emphasized that famines are not due to underproduction of food but rather to distributional failures. Also see: Sen, Amartya. Poverty and Famines: An essay on entitlement and deprivation. Oxford, Clarendon Press: 1981
scientific discourses that highlight the role of poverty and of other fundamental causes of malnutrition.

**Multiplicity of Determinants and Causes**

Current scientific discourse on malnutrition varies from more holistic frameworks with overlapping levels of determinants, to the more strictly biochemical or single-cause orientations. The more complex and multifactorial discourses on malnutrition are not unique to the 21st century. As we saw previously, even in 1938, Fox and Back proclaimed that malnutrition, “‘as well as being a problem of physiology...is also an economic, agricultural, industrial and commercial problem’” (cited in Webster 1986:448). Although they left out the social, political, and historical problems, nevertheless even in the 1930s it was clear to some researchers that political and economic factors were key causes of malnutrition. Whether this was intentionally ignored by subsequent researchers or merely lost within the biologization and medicalization of malnutrition is not as important as understanding what is lost and how by narrowing malnutrition to physical pathology. As Black explains regarding malnutrition:

> More mistakes, and more crass mistakes, have been made in this field than perhaps in any other. The reason is that hunger and malnutrition are symptoms not only of casualty and disaster-induced stress, but of a phenomenon far more fundamental, more complex, more varied in both its nature and its settings, and less temporary in its manifestations: poverty. (Black 1996:63)

Understanding that poverty is fundamental to malnutrition is not new. It does however change the way in which malnutrition is viewed. With this shift in perspective, “poor nutrition was seen as a disease of the international body politic, not of the small human frame” (Black 1996:65). The extent to which this shift in perspective has been incorporated into scientific discourse varies.
The socioeconomic perspectives on malnutrition from the mid-20th century were mentioned previously; however it is important to see how these perspectives in scientific discourse have continued, changed, and remained the same in the decades since. In a recent paper on nutritional status in Ethiopia, the underlying causes are outlined:

The immediate determinants of children’s nutritional status are dietary intake and health status. These are in turn influenced by underlying determinants: food security, adequate care for mothers and children, and a proper healthy environment, which includes the availability of safe water, sanitation, health care, and environmental safety. The ability of households to translate resources to achieve food security, care, and a healthy environment are limited by political, economic, cultural, and social factors at the community and national level, which are the basic determinants of children’s nutritional status. (Silva 2005:2, referencing Smith and Haddad 1999)

The author does address the underlying political, economic, cultural, and social factors that contribute to malnutrition; however, she fails to include historical context in her discussion. This is not to say that all issues in Africa should be related back to colonialism or neo-colonialism;48 however, it is necessary to take into account how historical factors have shaped the current political economic structures and socio-cultural relations. A historical framework illustrates how and why historical processes took place and enables us to see their effects; this can inform future policies and interventions and help avoid the repetition of mistaken ideas and “solutions.”

History is also critical to remain cognizant of in order to preclude the framing of African malnutrition as a particularly African problem.

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48 Indeed, Achille Mbembe (2001) argues that we need a true historicity of Africa in relation to nothing other than Africans because of the long and problematic history of writing about Africa as the “other” in relation to the West. He also emphasizes the need to focus on the present in writing of and studies about Africa and not solely on the past and the future. But this also does not mean that history should be forgotten, including colonialism. This speaks to the fact that the effects of colonialism cannot be removed from the present and therefore this past cannot be allowed to be overlooked. This is particularly true for science, in which the discourses created are often ahistorical. See: Mbembe, Achille. 2001. On the Postcolonial. Berkeley: University of California Press.
Conclusion

This chapter has laid out some of the historical and current ecological perspectives on malnutrition in the scientific literature. Fears of African degeneration moved from bodies to the land and prompted interest in agriculture as a means of preventing soil erosion and land destruction, as well as improved nutritional status. Faith in agricultural efficiency as the path to progress greatly influenced the advised (and enforced) interventions in African agriculture. Agricultural “betterment schemes” have played a role in the complex relationship between the expansion of malnutrition in Africa and land use changes over the past century. We saw how the promotion of specific crops (like maize and cassava) by colonial officials related to European food preferences but also appeared as scientifically validated (through such notions as the efficiency and high-productivity of such crops). We saw how malnutrition in Africa continues to be associated with climate, in this case due to scientific research on climate change. Finally, we saw examples from the literature of more holistic frameworks of malnutrition which describe a multiplicity of determinants and causes. In the next chapter we will see a further discussion of technical approaches to “solving” malnutrition in Africa.
Chapter 4

Technologization of Malnutrition: A discussion of interventions

“...individually targeted treatment programs have dehumanizing effects, as the broader social structures that contribute to suffering and impoverishment remain hidden and intact...By targeting a biological condition, political and economic concerns are sidelined, and local forms of solidarity are undermined...” – Kalofonos (2008:199)

We have seen the ways in which scientific discourse frames malnutrition in Africa; moreover, these trends influence interventions on the part of institutions—governments, multi-lateral organizations, and non-governmental organizations (NGOs). In chapter 1, we saw how scientization of problems like hunger or famine can result in a search for technical fixes, which reduces complexity to a single dimension. In an article about investing in technology for development, Lael Brainard of The Brookings Institution, begins a discussion of health in the developing world by claiming, “the successes have been stunning, and science and technology have been at the center” (Brainard 2005:3). Her examples include immunization campaigns and simple health technologies like oral-rehydration therapy. She then goes on to explain why investing in technologies is better than other interventions. As Brainard explains it:

…unlike economic interventions, which are highly context dependent for their success, many health interventions have been effectively implemented even in environments with dysfunctional governments, poor public health systems, and, in the extreme, civil conflict. While many well-meaning economic development projects fall prey to deeply rooted corruption or the inertia of ineffective bureaucracy, it is not necessary to fix the entire institutional context to, for example, immunize school-age children. (3)
She highlights the promise of technology for the precise reason that it ignores all of the contextual “obstacles” that, in fact, create the problem in the first place. This assertion highlights the problems inherent in seeking out technical fixes to public health problems.

Furthermore, technical fixes do not just come in the form of immunizations and medications; the scientization of malnutrition is reflected within the technologization of proposed solutions, from “medicalized” foods to agricultural biotechnology. This section will highlight several historical, current, and future interventions related to malnutrition in Africa. These interventions show how an emphasis on malnutrition as a physical pathology and the reliance on technical fixes as the solution to improved agriculture and nutrition divert attention away from the underlying political economic conditions that ultimately produce malnutrition.

**Technical approaches to malnutrition: Plumpy’nut and UNICEF**

The technologization of hunger relief has been a prominent trend in the past century. Two interwoven stories of food-based interventions aimed at treating malnutrition provide an example of this tendency. The first is the formation of UNICEF in the 1940s with the intention of providing U.S. surplus dried milk to malnourished children of war-torn nations after World War II and then to children in developing nations in 1949. From the start, UNICEF’s approach can be characterized by the expression: “Civilization follows the cow,” and it had a major role in the “Protein Decade” of the 1950s in which:

‘Protein malnutrition’ was now identified as the number one malnutrition ‘disease’ the international community ought to address, not only in Africa but elsewhere. It was talked of as an epidemic, like measles or diarrhoea. This implied that it could be treated by the consumption of a dietary medicine: protein. From this point on, the need to fill the ‘protein gap’ became the predominant thrust of WHO- and FAO-led nutritional policy. (Black 1996:64)
Although the diets of many poor Africans were likely protein-deficient, the emphasis on providing a silver bullet fix of skim milk ignored the broader issues of calorie deficiency and the underlying causes of poverty and structural inequality. In a 1978 essay on malnutrition, Eddy remarks on the specialization and scientization of tropical medicine:

Is it possible that this concentration on particular nutritional deficiencies causing malnutrition in childhood has led to a neglect of the conditions in the community of which the child is a member? In [Sierra Leone] almost as a condition of UNICEF aid, we accepted the offer of freely provided skimmed milk powder to be used as a prophylactic for kwashiorkor…Facile attempts to supplement the diet of children with deficient nutrients are unlikely to succeed unless the condition of society as a whole is taken into account. (Eddy 1980)

Not only does the history of UNICEF expose past and current qualms about technical approaches to malnutrition, but it also brings up the quandary of food aid. The humanitarian wrapping of milk provision by UNICEF helps to cover up the source of the milk—U.S. dairy farmer’s surplus—and the reasons why it was skim milk—the fat was of higher value which the industry used to make cream and butter to sell at home. As Heikens and Manary in a 2009 report explain: “The remaining butter mountains in Europe and the USA led to new subsidies, wealthy farmers and highly mechanised farms; all contributing to this highly subsidised inequity in the world” (Heikens and Manary 2009:97). The tendency of food aid to be surplus food from U.S. farmers leads to further issues that will be discussed below in the context of aid; for now, however, this quote highlights how the provision of skim milk can not only be a band aid for hunger produced by poverty and structural violence, but it can also reinforce these inequalities.

The second story is the recent development of a ready-to-use-therapeutic food (RUTF) called Plumpy’nut, which is a fortified packaged food made primarily of peanuts that is high in calories and protein. Plumpy’nut is primarily produced in the West for provision to malnourished
children throughout developing nations. A 2010 New York Times article describes Plumpy’nut as being able to “transform a child from literally skin and bones to certain survival in just four to six weeks” (Rice 2010). The acclaim is phenomenal and as nutritionist Steve Collins explains, “…people love a silver bullet” (cited in Rice 2010). Anderson Cooper “compared the paste to penicillin, concluding that it ‘may just be the most important advance ever’ in the realm of childhood malnutrition” (Rice 2010). This product is very effective for severe acute malnutrition: when Doctors without Borders gave Plumpy’nut to 60,000 children during a famine in Niger, 90% completely recovered and only 3% died, and now the UN has endorsed it for home treatment of acute malnutrition (Rice 2010). However, portrayals of this new product as a panacea for the millions of malnourished children across the globe also led prominent nutritionist Steve Collins to voice concern about “a new world order where poor people are dependent on packaged supplementary foods that are manufactured in Europe or the United States” (cited in Rice 2010). This proposed solution highlights the danger of relying on technical fixes. In particular, solutions created and produced in the global north to solve the complex issue of malnutrition in the global south can exacerbate existing power relations. Moreover, technical solutions do not come only in the form of food, but also in the realm of agriculture.

The Green Revolution: Biotechnology as the solution for Africa

As was prevalent in scientific discourse throughout the 20th century, many scientists maintain that food insecurity in Africa today is a direct result of the lack of technology in

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49 Plumpy’nut (and similar formulations) is most often mass-produced in the West for provision to children in developing nations, however, it is critical to acknowledge that there are some organizations, such as Partners in Health, that have created local productions systems (see: www.pih.org). This approach has enormous consequences for the sustainability of the program, the promotion of local employment and agriculture, as well as a significant shift in traditional notions of aid. Nevertheless, the formula is primarily manufactured in the West through for-profit or non-profit organizations (such as Edesia Global Nutrition Solutions in Rhode Island).
African agriculture. They emphasize, in particular, the failure of the Green Revolution to reach the continent. Robert Paarlberg, a scholar of agricultural science, contends that Africa is “starved for science” and that the lack of biotechnology in the continent keeps Africans (especially rural Africans) hungry and stuck in poverty (Paarlberg 2008). Science, specifically biotechnology, is the solution to African hunger and poverty. This is an enormous debate that is beyond the scope of this paper; however, it is important to point out how some of the historical themes in the scientific discourse on malnutrition and agriculture continue to inform agricultural interventions and policies today.

One of the most polarized and contentious debates about the role of technology in African development is that of genetically modified (GM) foods.50 Brainard (2005) exemplifies the rhetoric from scientists and policymakers, especially in the United States, regarding the promise of biotechnology as the solution to Africa’s hunger problems. She says that “Sub-Saharan Africa faces special challenges such as poor soil, uncertain rainfall, and utterly inadequate transportation networks. But there is a big potential for biotechnology in Africa to increase yields, reduce environmentally harmful farming methods, and ultimately enhance nutritional outcomes [emphasis added]” (Brainard 2005:5). She further explains that “the touchstone for future agricultural improvement is the green revolution, one of the biggest development success stories and undoubtedly one of the highest returning investments in history” (4). She credits the green revolution for the enormous increases in agricultural

production in China and India, and also claims that not only will biotechnology increase yields and reduce hunger, but it will lessen environmental degradation. She ends by arguing that the green revolution for Africa is not only possible but critical. She says that in order to achieve this green revolution and promote development, what is needed is “more experimentation, not less, and a much more systematic and research-based approach to evaluation” (6). Brainard embodies the faith in science that Dubow describes in the early 20th century; the West is considered to have achieved progress through the adoption of biotechnology and the Green Revolution and it is assumed that this progress is exactly what Africa should strive for, and that progress will be linear. Her rhetoric highlights the promise of biotechnology as a silver bullet for African development.

In a blog about the debate over GM foods, food security, and hunger in Africa on the Pulitzer Center website, statements from a variety of policymakers, scientists, and activists are weighed together. One scientist, Dr. Terry Etherton remarks: “Despite some success with maize [corn], cassava, and some horticultural crops, few African countries have experienced a Green Revolution” (Pulitzer Center 2010). In light of the history of state interventions promoting the production of corn and cassava, it is significant that these are the only crops deemed a success in Africa. As we have seen, the consequences of growing cassava and corn at the expense of native

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51 He fails to account for 48% of Indian children under-five that are currently stunted. The 2011 HUNGaMA Survey Report based on data from the 2005-2006 National Family Health Survey in India states that 20 per cent of Indian children under five years old were wasted (acutely malnourished) and 48 per cent were stunted (chronically malnourished). This suggests that while food production may have increased in India as Brainard mentions, clearly food consumption is based on something other than production. This is what Amartya Sen refers to as the “failure of entitlement.”

52 Again, he fails to account for the widespread environmental consequences of India’s green revolution. In *Awakening Giants Feet of Clay*, Pranab Bardhan highlights these environmental consequences of the Green revolution in India: “intensive and continuous monoculture and mining of water has led to soil degradation, waterlogging and salinization, depletion of groundwater aquifers, saltwater intrusion” in addition to polluted waters, deforestation, and expansion of deserts (123). He also cites data published in 2008 that highlights the particularly atrocious environmental degradation in agriculture in India (compared to all countries and within similar country income group). See: Bardhan, P. 2010. *Awakening Giants Feet of Clay: Assessing the economic rise of China and India*. Princeton: Princeton University Press.
crops and more nutrient-dense varieties are widespread. There is clearly dissonance between those experts who consider that the corn and cassava which make up nearly all of the diets of many Africans are the two main agricultural successes, and the nutritionists who blame the overreliance of African diets on one or two staple crops as a cause of protein-energy malnutrition.

This debate, although focused on Africa, has largely been framed as a conflict between US and EU experts and anti-GMO (genetically modified organisms) activists. The blog *GMO Africa* argues for the need for to promote an “open-door policy to new technologies” in Africa in order to solve the hunger problem and claims that “when activists intimidate Africa, through fear, into not exploring potential benefits of GM [genetically modified] foods, the continent suffers. They stymie a rational debate about whether GM foods have any relevance to Africa” (Pulitzer Center 2010). Despite reference to a rational debate, the push for an open-door policy for new technologies suggests that discussion and deliberation are obstacles. Moreover, this notion that rich-world distaste for biotechnology is being exported to Africa at the expense of the African poor is common on the “expert” side of the debate (Paarlberg 2008). At the same time, however, these same experts highlight the consensus agreement about the promise of biotechnology for African development among European and American experts and “prestigious academies of science” (Paarlberg 2008:viii). Experts blame rich-world activists for the failure of agricultural science development and adoption in Africa at the same time that they rely on the knowledge of rich-world experts. Where are the African voices in this debate?

These perspectives fall to one side—characterized largely by the voices of scientific and government experts—of a highly polarized debate; however the actors in the debate (and the debate itself) are much more complex than this. In a commentary piece in the *South African*
Journal of Science, Chetty and Viljoen (2007) assess the polarization of the African biotechnology debate. There are NGOs that “unscrupulously advocate that biotechnology is a ‘silver bullet’ to alleviate hunger in developing nations, without any scientific basis” (269) and NGOs that claim that biotechnology has no role in the future of African agriculture because it is the problem not part of the solution. As Chetty and Viljoen explain:

The commonly raised concerns regarding GM in Africa include: 1) issues of food safety, especially since consumption patterns on the continent differ from those in the EU and US; 2) patents on GM products and their impact on food security; and 3) the threat of gene escape into locally adapted landraces and its consequences for food exports…[because] African countries are unable to compete with subsidized agriculture in the EU and US and have to consider niche markets for non-GM and organic production. (270)

The authors suggest that GMO advocates refuse to acknowledge the possible risks associated with GM foods53 and fail to understand the political and economic threats that GM poses to Africa nations, while the anti-GMO advocates are also polarized in refusing to enter into discussion about the possible merits of GM crops. The authors maintain that there is potential for biotechnology to benefit developing countries, however, there needs to be a rational dialogue between various actors. The blind faith in biotechnologies as silver bullet fixes for African malnutrition stymies discussion and fails to take into account the socio-economic, political and infrastructure constraints. As the authors sum up:

To claim that starving millions will be saved and then charge a technology fee is paradoxical, especially in Africa, where a culture of seed-sharing and seed-saving has existed for generations. For GM technology to be beneficial, it is important that interested parties including NGOs, government bodies, biotech companies and scientists work proactively to resolve conflicts. (270)

53 As an example of Chetty and Viljoen’s claim, in the foreword to Starved for Science, Borlaug and Carter say that “The policy debate about the suitability of biotech agricultural products should focus less on risk—since after more than a decade of commercial experience with the technology, no new risks have yet been documented—and more on access for the poor” (Borlaug and Carter in Paarlberg 2008:ix). This prompts the questions: What are these risks, how are they calculated, and by whom?
By advocating for a dialogue between various actors, the authors argue against the depoliticization of malnutrition and the technologization of agricultural solutions. Without rational discussion, scientists can oversimplify the advantages of technology, thereby privileging expert knowledge. Depoliticization can reinforce the status quo power relations between the global north and global south and between the experts and the farmers.54

A particularly interesting case in which to examine the intersections of scientists and activists in the GMO debate is in regard to the 2002 food crisis in Southern Africa. Noah Zerbe explains this debate at length in his 2004 article in *Food Policy*. In the spring of 2002, some 15 million people across the region faced critical food shortages, however, in October 2002 “the relief effort took an unexpected twist, as the governments of Malawi, Mozambique, Zambia, and Zimbabwe rejected US food aid because of concerns over the inclusion of genetically modified maize” (Zerbe 2004:594). This sparked a worldwide debate about GM foods centered on the four African nations, the European Union (EU), and the US.

The first issue in the debate was around the cause of the food crisis. A few months before the famine began, the Malawian government sold off its national maize reserve, which the US cited as evidence of the role of bad governance in causing the famine. However, this assertion was complicated by the role of the IMF and World Bank: “…according to Malawi’s President Muluzi, the government was ‘forced [to sell the maize] in order to repay commercial loans taken out to buy surplus maize in previous years’” (Zerbe 2004:596). While the US continued to blame

54 As a problematization of this notion of privileging power relations, some say that keeping agricultural science out of Africa also privileges power relations and that the lack of adoption of biotechnology in Africa is due to exportation of rich-world distaste. There is little investment in agricultural research and science in Africa compared to other developing regions and some argue that this is what is unfair politically and ethically. In the foreword to Paarlberg’s book: *Starved for Science*, Jimmy Carter and Norman Borlaug claim that “a recent withdrawal of donor support for modern agricultural science in Africa, plus outright opposition to new farm science on the part of some global pressure groups, is contributing directly to the continued growth of poverty and hunger in rural Africa” (2008:vii). This other side is important to keep in mind but so is the idea that technology in and of itself is not the solution and the problem is the polarization of the debate (on the part of the advocates as well as the opposition).
the food crisis on poor governance and drought, Zerbe (drawing from Amartya Sen) argues that it was the result of an entitlement failure, in which the capacity to access food was limited by: “the low level of overall development, the imposition of neoliberal structural adjustment programs, the land question, and the HIV/AIDS crisis, to name but a few” (598). The first failure of the US food aid policy was to misinterpret the cause of the food crisis. This led to further assumptions that the problem could have been avoided with the adoption of new technologies. Zerbe argues that

…agricultural technologies, however productive, cannot resolve what are by definition social, political and economic questions. This important fact is often overlooked by advocates of biotechnology, who assume that higher yields available through new technologies will resolve the problem of hunger in the Third World and would have averted the 2002 crisis in Southern Africa. (598-599)

Despite Zerbe’s discussion of the US belief in the merits of science and technology to solve African hunger, the controversy resulting from the 2002 food crisis was never just a scientific debate; rather it was a heated diplomatic confrontation and power struggle between nations.

The US government’s response to the African refusal of US food aid sparked controversy over the motives behind US food aid policy. The US political rhetoric was heated and extremely polarized: “Andrew Natsios, head of the US Agency for International Development (USAID)...contended that anti-GM ‘groups are putting millions of lives at risk in a despicable way’” and “an anonymous official at the US State Department lashed out, arguing ‘Beggars can’t be choosers’” (Zerbe 2004:600). The U.S. argued that there were no risks of GM foods and that the EU (which has blocked the production and importation of GM foods) and Africa were misguided and had no scientific evidence to back up their fears. However, the real issue was not over scientific evidence of risk and benefit. As Zerbe argues throughout his paper,

US food aid to Southern Africa had little to do with the impending famine. Instead, the provision of assistance to Southern Africa was primarily intended to secure particular
foreign policy objectives of the US government – in this case, promoting the cultivation of biotech crops, expanding market access and control of transnational agricultural corporations, and isolating Europe in the GMO debate. (594)

The US took advantage of a particularly vulnerable period for Southern Africa to push GM foods into these nations.

Moreover, the four African nations’ refusal to accept GM food aid was more nuanced than the US ever acknowledged. The decision was based not merely on environmental and health considerations that are raised by biotech’s critics; instead, African governments were trying to pursue the best strategy for long term economic viability in the face of the current international political climate. The real issue in this food aid debate was “the failure of American policy makers and the biotech lobby to understand the contextual rationality of the decision-making process in Southern Africa” (Zerbe 2004:595). The missing link in this diplomatic confrontation over biotechnology was the political discussion and debate that is crucial to policymaking and which scientific technologies are not above.

This case study highlights many themes that have been discussed throughout this thesis, including the frameworks of famine, faith in technical fixes at the expense of political discussion, biotechnology interventions, and the intersections between hunger and agricultural science. This example also highlights the controversy over food aid which will be the last intervention discussed in this chapter. Although food aid does not always relate directly to the scientific community, as we saw above, scientific technology can be a critical component of food aid policy. Regardless, the practice of food aid overlooks the underlying political economic conditions that produce hunger (i.e. depoliticization) and problematizes the continued (political and economic) role of the West in Africa.
Food Aid: Victimization, humanitarianism, and Western aid

Food aid is given by many rich nations to governments throughout the world, and not only in times of famine. However, the provision of food aid during famines is particularly well discussed and lends an introduction to the topic here. Because PEM is a common manifestation of famine and also exists before famine is officially declared, PEM is often framed within the same discourses, as evidenced by its elicitation of food aid. As Edkins explains: “’[this] enables it to be detached from its embeddedness within a set of historically specific and locally based economic and political processes…Famine as failure, as disaster, produces victims. Victims need welfare provision or aid, not a political voice” (Edkins 2000:53-54). Severe malnutrition (like famine) can be seen as a failure in which the losers are victimized. Being the victim does not relieve an individual from the burden of blame, as blame placed on the victims of globalization is widespread (Trouillot 2003:57), however, it does remove the agency from these individuals, as well as the historical contingencies of their plight. Victims elicit pity and pity comes in the form of aid, but this aid also has “a role in the reproduction of the international system. It is deeply enmeshed in the third world/first world discourse. The solution to the problems of Africa, for example, is seen as coming from the benevolence of the economically rich countries of the north” (Edkins 2000:54). This can be seen as an extension of humanitarian imperialism and the “science” of colonial nutrition and medicine.

The position of food aid in the power struggles between nations and conflicts of international politics is significant. For the US in the 20th century, “Food aid, as distinct from foreign aid in general, was seen to have a number of overt purposes: for surplus disposal and overseas market development; as an instrument of foreign policy in the Cold War context; and to provide basic needs” (Edkins 2000:69). The debate over US GMO-containing food aid to
Southern Africa in 2002 discussed in the previous section is an important example of these multiple purposes of US food aid policies. What ultimately became apparent was the contrast between US food aid policies and those of the EU. In response to the US condemnation of EU policies on GM foods, a spokesperson for the EU replied:

    Food aid to starving populations should be about meeting the urgent humanitarian needs of those who are in need. It should not be about trying to advance the case for GM food abroad, or planting GM crops for export, or indeed finding outlets for domestic surplus, which is a regrettable aspect of the US food aid policy…The EU policy is to source food aid for emergency situation as much as possible in the region, thus contributing to the development of local markets, providing additional incentives for producers and ensuring that products distributed closely match local consumption habits. (Zerbe 2004:604)

While EU tries to purchase its food aid from inside the affected region, the US relies almost exclusively on in-kind donations and “financial aid tied to the purchase of American agricultural commodities” (601) and it is clear who the primary beneficiaries of the US food aid system are: American agricultural producers. This policy, rather than helping to reduce the suffering of hunger in the long term, focuses on the short term relief that merely reinforces global inequalities and local poverty.

    The practices of food aid become even more problematic when it is given not as emergency aid but to meet subsistence needs of poor people and to increase food security of food insecure countries. Food aid has recently been given a more development oriented slant, and thus a greater permanence in how we think about hunger and aid (Edkins 2000:70). Food aid is also a form of humanitarianism, an ideology which has been critiqued based on its logic of prioritizing the relief of suffering and protection of “bare” (or biological) life rather than granting access to social and political rights (Ticktin 2006; Robins 2009). By justifying humanitarian interventions, like food aid, with appeals to compassion, suffering can be depoliticized and dehistoricized with perverse effects on political outcomes and the silencing of the victims (Kalofonos 2008:11-12).
As food aid becomes a means of meeting the subsistence needs of poor people in low-income nations, the risk of protecting bare life and reducing suffering at the expense of granting access to political and social rights becomes more permanent. The discussion of humanitarianism and food aid extends well beyond the scope of this paper, however, it is critical to recognize how food aid depoliticizes hunger and famine, masking its sometimes very political motives.

To be clear, depoliticization is a political maneuver. Knowledge is never apolitical, so while political discussion about the fundamental causes of famine and malnutrition is negated, food aid and other technical solutions (from biotechnology to RUTFs) do have political consequences. Those in power claim to have expert knowledge afforded to them through their professional status and because of this, their voices displace voices of “non-experts,” including those most affected by malnutrition and food aid. This stymies the possibility of political discussion and public dialogue about the causes of malnutrition and famine while reinforcing existing power relations.

Conclusion

In this chapter we have seen how the themes in scientific discourse are reflected in interventions from agriculture to food aid; that is, how theory becomes practice. In particular, we have seen how food-based solutions to hunger are technologized—focus is placed on nutrients, experts, and aid—and in the process, discussion of the underlying causes of hunger and famine is lost. We have seen how past discourses on agricultural practices have been incorporated into current rhetoric on technological solutions to the enduring malnutrition in Africa. In particular,

many scientists advocate biotechnology and a Green Revolution as the only hope for alleviating hunger in Africa. The debate over GMO crops is particularly polarizing, in part due to the scientific hubris that technology is the answer. Finally, we saw how food aid can depoliticize hunger with similar effects to that of technical, scientific solutions. The following chapter will delve more specifically into the biomedical study of kwashiorkor and the ways that biomedical language can have social and political implications.
Chapter 5
The Medicalization of Kwashiorkor

“When asked where the line should be drawn between starvation and hunger, Latsky replied that only those with ‘swollen ankles’ and ‘puffy faces’ were actually starving.” – Wylie 2001

Originally, kwashiorkor was a term used by the Ga-Krobo-Adangbe megatribe of southeastern Ghana to refer to an illness affecting the first born with the birth of another child (Williams 1933; Konotey-Ahulu 1991). It was used to describe siblings who were born close together, even when the child did not develop the symptoms now associated with this syndrome (Konotey-Ahulu 1991). The use and definition of this term indicated a social pathology induced by the ill spacing of births. Research into the biochemical causes of this syndrome reflect how far from a social understanding of kwashiorkor we have moved. This chapter aims to elucidate the process and consequences of the medicalization of kwashiorkor in Africa with the shift away from understanding malnutrition as a socially produced condition to that of a biochemical pathology.

In the 2009 report, “Kwashiorkor in Africa,” Heikens and Manary begin by saying: “…we use kwashiorkor as the icon for life threatening childhood malnutrition” (96). This statement reflects a historical trend whereby biomedical researchers use kwashiorkor as emblematic of severe childhood malnutrition. This is significant to the scientization of childhood malnutrition more broadly (Marks 1997) because kwashiorkor is a particularly medicalized form of malnutrition due to its severity and clinical presentation. Kwashiorkor is characterized by its particularly visible physical manifestations, including: changes in skin pigmentation and
dermatitis, de-pigmentation of the hair, oedema (including the iconic swollen belly), stunting, apathy, irritation, and wasting. In addition, it often results in the ultimate arrival in hospitals because of the associated high lethality (Williams 1933; Trowell 1949; Golden 1998; Krawinkel 2003). Despite its characteristic manifestation, its etiology and associated pathology are still up for debate almost eight decades later (Krawinkel 2003). Despite this ambiguity, textbooks label it a type of protein-energy malnutrition (PEM)—the most lethal categorization of malnutrition because it results from lack of protein and/or calories (Mach 2001). This category is one of two major classifications of malnutrition, the other being micronutrient malnutrition.

As previously mentioned, I focus on severe malnutrition, specifically PEM, for two main reasons. First, micronutrient malnutrition is widespread throughout the world and therefore its geography is not particularly significant, whereas the history of kwashiorkor is tightly linked to the tropical world. Second, while PEM also leads to micronutrient malnutrition (because there is insufficient food to provide all the micronutrients necessary for good health), it has much broader social, economic, and political causes that are swept under the rug whenever people explain the cause and solution in technical terms.

**Discovery**

The “discovery” of kwashiorkor marked the impetus of the “discovery” of severe (and childhood) malnutrition more broadly. Its recognition as a clinical entity also quickly medicalized what Africans considered to be a social disease. Cicely Williams, a British doctor in the Gold Coast, first described this syndrome in Western journals in 1933. As mentioned, kwashiorkor was a local Ga name for “the disease of the deposed baby when the next one is
born,” (Williams 1935) and was recognized across Africa by various other names. A similar syndrome was also documented in Europe and in other tropical regions in the late 19th and early 20th centuries and even in records from Biblical times (Rijpma 1996; Golden 1998). However, it was not until Williams’ “discovery” of kwashiorkor as a clinical entity and her subsequent article in *The Lancet* that kwashiorkor, and severe malnutrition more generally, were acknowledged by biomedicine, public health, and national governments (Schepert-Hughes 1992; Golden 1998; Wylie 2001). As Rosenberg explains, disease as a clinical entity and social phenomenon “does not exist until we have agreed that it does, by perceiving, naming, and responding to it” (Rosenberg 1992:xiii). In this way, the naming of kwashiorkor was the impetus for the emergence of malnutrition as a global health problem and its classification as a medical syndrome. Kwashiorkor, relative to other forms of malnutrition, manifests much like that of a “typical disease;” it is visible, has a predictable progression, and causes high fatality if untreated (up to 90%) (Williams 1933). The application of the medical model was likely intriguing to a colonial government who did not have the desire, or arguably the means, to address the underlying conditions causing pervasive chronic malnutrition. As Packard has written, “medical research was cheaper than environmental reform” (Packard 1993:273). In addition, the disease framework of malnutrition was particularly influential in Africa, where some of the first scientific institutions were medical laboratories (Malowany 2000).

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56 Nomenclature became an important component of the discovery of kwashiorkor because of Williams’ appropriation of the African term. This prompted some researchers to disregard her discovery and description of a new disease because of they saw this as unusual and “unprofessional” for a colonial doctor. Others saw it as evidence of her role as a community doctor embedded in the places she worked and referred to this as “listening to the Ga” (Stanton 2001). The role that the terminology has on the continued association between kwashiorkor and Africa is interesting to consider.

57 In 1953, Williams wrote: “In fact, a name means very little except to classify a certain conception. Until pathologists and biochemists can give us more precise information about the defects, we may well accept the word kwashiorkor in all its cacophony” (cited in Heikens and Manary 2009:96). She implies that the social understanding literally contained in the name have no real merit for medicine until the disease is investigated scientifically.
The primary focus on kwashiorkor framed a research agenda and rhetoric of malnutrition for the century to come; moreover, its discovery in Africa is significant for its association with the tropical world. As Schepers-Hughes explains, “protein-calorie malnutrition in children…only entered medical nosology when British doctors working in the colonies discovered it as a ‘tropical disease’” (Schepers-Hughes 1992:274-75). Similar syndromes had been described in temperate areas, such as *mehlnährschaden* in Germany, but kwashiorkor was, at least through 1950, considered to be different in the tropics (Trowell 1949; Brock 1952). This was due in part to the belief that tropical infections played a role in the etiology of kwashiorkor, even though kwashiorkor was first discovered in South Africa which is not within tropical Africa and where tropical infections are not common (Brock and Autret 1952). Despite the association with the tropical world, some researchers began to acknowledge that the same syndrome might occur in the poorer towns of southern Europe or other areas during times of war (Trowell 1952). More recently, kwashiorkor has been considered almost exclusively to occur in “nearly all technically underdeveloped countries in the world” (Kamalu 1993:122) and “is almost never seen in the developed world” (Manary et al. 2009:106). Because of the current association between the tropical regions and distribution of underdeveloped nations, a widespread association between kwashiorkor and the tropical world persists.

In addition, since its discovery, kwashiorkor has developed a distinct association with Africa. The first major report on kwashiorkor, by Brock and Autret in 1952, focused on kwashiorkor in Africa. In their definition of kwashiorkor they begin with: “A nutritional syndrome (or syndromes) found among indigenous Africans…” followed by a list of associated signs and pathologies (Brock and Autret 1952:11). Later they claim that “any clinical syndrome which includes these five characters and occurs in Africa can undoubtedly be called
kwashiorkor” (30). They acknowledge that the syndrome may occur elsewhere but that it had not been proven to be the same syndrome to that which occurred in Africa, so at the time, its specificity to Africa was considered part of its definition. The association of kwashiorkor with Africa has continued since its discovery in 1933. In a definition of the syndrome in Robbins and Coltran’s renowned medical textbook on pathology, they note that kwashiorkor is the most common form of PEM in African children, with no mention of any other region in their description (Robbins et al. 2010). In another medical textbook, Manson’s Tropical Diseases, the section on kwashiorkor includes a detailed account of the regional association of kwashiorkor prevalence and dietary habits throughout Africa (Brabin and Coulter 2009).

58 The definition of PEM in the 8th edition of Robbins and Cotran Pathologic Basis of Disease is as follows: “a range of clinical syndromes, all characterized by a dietary intake of protein and calories inadequate to meet the body’s needs. The two ends of the spectrum of PEM syndromes are known as marasmus and kwashiorkor.” The authors further define: “Kwashiorkor occurs when protein deprivation is relatively greater than the reduction in total calories. This is the most common form of PEM seen in African children who have been weaned too early and subsequently fed, almost exclusively, a carbohydrate diet [original emphasis]” (Robbins et al. 2010:428-429). This definition is important for several reasons: 1) it considers protein deficiency to be the cause of kwashiorkor with no other hypotheses mentioned, 2) it refers to the importance of weaning, 3) it highlights the commonality of kwashiorkor, and 4) the only geographic location it mentions is Africa, reiterating the long-standing association of kwashiorkor with Africa throughout the past century. These aspects of the definition all highlight how the trends common throughout the 20th century have become so ingrained in the medical understanding of kwashiorkor as to continue to appear in its most basic medical definition.

59 Manson’s Tropical Diseases highlights the relationship between diet and kwashiorkor in a way reminiscent of Brock and Autret’s report: “Kwashiorkor is associated with areas where staples have a low protein:energy ratio…These foods may also be deficient in micronutrients. Kwashiorkor is not common in fish eating or cattle herding communities if diets are supplemented by animal protein. Comparison between village children in Keneba, The Gambia and the Baganda area of southern Uganda showed distinct differences in nutrition, growth and endocrine response. In the Gambia, where the predominant type of malnutrition is marasmus, the main staple is a millet gruel which is low in energy. In the Baganda area of Uganda, kwashiorkor is the predominant type of malnutrition, the major staple is bananas…” (Brabin and Coulter 2009:539-540). This description of the association of kwashiorkor with diet is again focused solely on Africa, highlighting the ingrained relationship between Africa and kwashiorkor despite the syndrome’s global prevalence.

The definition of kwashiorkor in Manson’s Tropical Diseases states: “The aetiology of hypoalbuminaemia and oedema in kwashiorkor has been debated since the 1930s when the simplistic theory of dietary protein deficiency was proposed by Cecily Williams who coined the name kwashiorkor…Recent associations include excess free radical generation, deranged amino acid metabolism and aflatoxin toxicity” (Brabin and Coulter 2009:540). This textbook highlights the continued controversy over the causes of kwashiorkor and mentions the multiplicity of factors leading to kwashiorkor. It also mentions a focus on poor weaning foods and non-exclusive breastfeeding.
Prevalence, Treatment, and Prevention

The prevalence of kwashiorkor is difficult to determine because of the challenges in distinguishing between diagnostic forms, especially in past literature. This highlights the importance of disease classification for prevalence statistics. Through the 1950s, kwashiorkor was considered one of the most widespread forms of malnutrition (Brock and Autret 1952). Now it is thought to be relatively rare compared to stunting and wasting (Heikens and Manary 2009). However, kwashiorkor is still often considered to be the most prevalent type of PEM in Africa (Schofield and Ashworth 1996; Robbins et al. 2010). This likely speaks as much to the recognition of malnutrition and re-classification of syndrome than to empirical changes in population health. A commentary from 2008 cites prevalence rates of kwashiorkor in Malawi at 2.5% in children aged 1-3 years, or about 20,000-32,000 children per year, and suggests that “across the maize-consuming countries of southern and eastern Africa, kwashiorkor is arguably the predominant form of severe childhood malnutrition” (Ndekha 2008:1748). Prevalence rates have often been based on hospital-based case studies (Brock and Autret 1952) which shifts the focus from the community to the hospital, affecting the prevalence rates and skewing the attention to more severe forms of kwashiorkor relative to those that are milder and more easily treated. Moreover, these statistics are likely to be underestimates because they only record the “medically visible,” (Farmer 2004) and those who are not—the home-bound, rural, most impoverished, and deceased—are often more significantly affected.

Treatment for kwashiorkor has been well-documented since the 1950s, yet kwashiorkor remains prevalent (Mach 2001). Skim milk was proposed as the treatment of choice in the 1950s and remains so today (along with a more complex treatment regimen and supplementary components). Although the prevalence of kwashiorkor has dropped since the 1950s due to
improved primary health care and awareness, the treatment of kwashiorkor has not significantly improved since then, despite eight decades of research (Schofield and Ashworth 1996). Between 1933 and 1952, the fatality rates of kwashiorkor dropped significantly, (Schofield and Ashworth 1996) from 90-100% in some areas (Williams 1935) to less than 30% and even as low as 2.8% with proper treatment, not including the cases fatal in the first 24 hours (Brock and Autret 1952). However, in the 1990s, fatality rates of 50-60% were still associated with oedematous malnutrition of which kwashiorkor is the major syndrome, (Schofield and Ashworth 1996) and even the 5% fatality rates suggested in a 2009 paper are not lower than those cited in 1952 (Heikens and Manary 2009). Treatment by the 1950s was well documented yet the discussion of treatment focused on the critical care of severe, hospitalized cases, at the expense of treatment of the communities in which kwashiorkor was endemic.

Although the time and money spent researching the etiology of kwashiorkor (and other forms of malnutrition) in hopes of finding a “cure” may seem benign, the ultimate prevention—a balanced and sufficient diet—was known even before Williams’ first account (Williams 1933). However, researchers today still claim that “without determining the precise etiology and pathogenesis of kwashiorkor we are not in a position to formulate rational or effective prevention strategies” (Manary et al. 2009:107). These authors not only highlight the need for precise etiology to produce better treatment strategies; they argue that a more precise understanding of etiology is needed for prevention. Yet, as Dr. Geoffrey Rose, key scholar and advocate of preventative medicine, has pointed out, “ignorance of specific causes does not of itself rule out the possibility of preventive action” and he highlights the example of the “dramatic benefits to public health achieved by reformers of the last century, whose measures to improve housing,

60 Oedematous malnutrition is a form of malnutrition characterized by edema (oedema in British English) which is swelling, particularly of the belly and legs, due to retention of fluid. Kwashiorkor is the most common type of oedematous malnutrition.
working conditions and sanitation antedated knowledge of bacteria and toxicology” (Rose 1992:97). Even without knowledge of the precise etiology of kwashiorkor, drastic improvements could be made by paying attention to the fundamental causes of malnutrition; however, the necessity of improved food access, dietary diversity, and a balanced diet are pushed to the side with a call for further biomedical research.

Research on kwashiorkor treatment continues today. A study published in 2011 in Science investigated the relationship between gut microflora, susceptibility to kwashiorkor, and treatment. According to the Science press release, the study consisted of the following:

For 3 weeks, the mice ate a typical Malawian diet, which consists primarily of ground corn flour with a smattering of vegetables and meat. Then for 2 weeks, the mice feasted on a mixture of milk powder, peanut butter, sugar, vegetable oil, and vitamins—a so-called ready-to-use therapeutic food [RUTF] for malnutrition that packs in eight times as many calories as Malawian fare. Finally, the mice went back to the corn flour mash for two more weeks [emphasis added]. (Pennesi 2011)

From this study, the researchers determined that kwashiorkor affects the gut bacteria which can affect the ability of children to recover. But looked at from another perspective, this study is primarily trying to find the best way to provide RUTF and follows the predominant ideology of promoting technical fixes to malnutrition and medicalizing hunger.

It is also noteworthy that these investigators used the language of typical and feasting to describe the corn flour-dominated Malawian diet and the RUTF, respectively. The typical Malawian diet needed to be supplemented with a high-calorie RUTF feast. Taking a different perspective, this rhetoric clearly suggests that the typical Malawian diet itself is the problem because it has become entirely reliant on corn flour. This interpretation highlights the need for prevention rather than treatment, while the study itself focuses on technical treatments over prevention.
The focus put on continued research in place of, or removed from, preventative action and public health promotion has historical foundations. For example, William Hughes, writing in the *British Medical Journal* in 1952 claims that:

If, as they contend, kwashiorkor has its origin in protein deficiency, what chance is there of supplying this deficiency in our time? With the prevalence of animal trypanosomiasis in West Africa there is no possibility of establishing herds to provide sufficient meat or milk there for many years. Even if Dr. Dean’s’ *sic* hopes are justified and vegetable protein solved the problem, it would take years of effort to switch the population on to the cultivation of soya beans for their dietary staple. May I therefore put forward a few points to show that the vitamin-deficiency theory of the origin of kwashiorkor should not be discarded for the moment?

Would not a clinician who examined a case of rickets find plenty of evidence of ‘malignant malnutrition’ and protein deficiency at the florid stage? And yet rickets has been abolished in this country at very little cost by vitamin supplements. The fact is that any form of disease which leads to inanition is likely to end in a syndrome of protein deficiency. It may be argued that in kwashiorkor we know the diet is defective in protein. But are our standards valid? Do not some of the finest physical specimens of the human race come from the same region where kwashiorkor flourishes? (Hughes 1952:1041)

Hughes questions the protein-deficiency hypothesis and advocates for further research, not because it is invalid, but because it highlights a macronutrient malnutrition problem that is much more expensive and difficult to address than a vitamin deficiency problem which can be inexpensively alleviated through supplements. Although researchers may be well-intentioned, advocating yet more research focused on technical solutions can distract from the fundamental causes of malnutrition.

**Medical Model of Kwashiorkor: Scientization**

Some of the corollaries of the process of scientization of kwashiorkor have already been introduced, including the emphasis placed on research, the continuous re-classification, the focus on treatment of hospital-based cases over prevention of milder forms of malnutrition, and the disregard of communities in which hunger is produced. However, I now take a closer look at
how kwashiorkor has been medicalized over the course of the 20th century and with what implications for hunger, more broadly.

Brock and Autret’s well-known WHO-sponsored report on kwashiorkor in 1952 provides an example of biomedicalization of malnutrition. In conclusion to a long discussion on symptomology, diet, and treatment, Brock and Autret conclude: “There is at present insufficient knowledge of the physiological and pathological changes which underlie the syndrome, and this aspect of the problem can be elucidated only by detailed clinical and laboratory research.” They continue: “…it is hard to establish a precise relationship, in scientific terms, between kwashiorkor and nutritional factors. But it is nevertheless possible to reach certain tentative conclusions [including]…a relation between kwashiorkor and food-supply and dietary habits” (Brock and Autret 1952:39). By emphasizing dietary habits and food-supply, they focus attention on the culturally- and biologically-centered aspects of diet, rather than addressing food access, which would implicate social, political, and economic causes of kwashiorkor. Of note, both of the factors they highlight could be addressed through “scientific solutions”—habits could be addressed through education of scientific eating, and food-supply could be addressed through technology.

Moreover, Brock and Autret’s report emphasizes the scientific fascination with kwashiorkor as a medical entity. They acknowledge that the treatment of kwashiorkor was well documented and includes the provision of protein, usually in the form of skim milk, which could lower the fatality rate to less than 3% (Brock and Autret 1952). The scientific knowledge was sufficient for treatment and for recognizing the relation to a deficient diet. But Brock and Autret conclude that “there are many fascinating and important problems associated with kwashiorkor which call for clinical and biochemical research and animal experimentation” (Brock and Autret
The scientific fascination with kwashiorkor was a stimulus for the subsequent burst in research on PEM through the 1950s and 1960s (which to a lesser extent persists today). Moreover, the medicalization of malnutrition in Africa served to direct the fascination with the pathology of malnutrition to the laboratory while leaving the debilitating effects in African communities.

A related point is the importance given to the classification of malnutrition in reports since the 1940s. This is not just a dilemma of the past; debate over the definition and characterization of kwashiorkor continues. And case definitions that frame malnutrition only in scientific discourse also limit the discussion of malnutrition to scientific causes and technical fixes. Brock’s report spends pages detailing the symptomology of kwashiorkor, primarily to ascertain the difference between kwashiorkor and other types of malignant malnutrition. Likewise, Trowell spends the majority of his influential 1949 report distinguishing slight nuances that differentiate kwashiorkor from the definition of pellagra (Trowell 1949).

**Classifications**

As mentioned above, classification is a critical aspect of the medicalization of malnutrition and efforts at classification have played a central role in studies of kwashiorkor since its discovery. Kwashiorkor has a long history of continuous re-definitions, problematizations, and controversy over causes and pathogenesis. Many causes have been proposed, from protein deficiency, to the role of aflatoxins, gut bacteria, and vitamin deficiencies (Krawinkel 2003). Indeed, the pathogenesis of kwashiorkor is so complex, especially in regards to its effects on the liver, that this complexity on the part of the disease, and curiosity on the part of researchers, has led to a tremendous amount of detailed research on the biochemical pathogenesis of kwashiorkor. Despite almost 80 years since Williams discovered the disease,
there is still no consensus on its cause; as Heikens and Manary state: “The etiology of kwashiorkor remains an enigma, and is likely to be multifactorial and thus excludes one simple uniform preventative and therapeutic approach” (Heikens and Manary 2009:97). This quote highlights both the uncertainties still surrounding kwashiorkor, as well as the link between research and practice.

The classification of kwashiorkor is critical to how this syndrome is approached (medically, politically, social), however, it also relates to how hunger and malnutrition, more broadly, are classified and addressed. As James Newman says: “The truism that definitions matter has particular relevancy in the health sciences where classifications about diseases and other disorders guide both the identification of populations at risk and the development of remedial interventions” (Newman 1995:235). In a 1995 paper he focuses on the relationship between the definition of PEM and its geography and suggests that PEM is a particularly striking illustration of the influence of definitions on how diseases are studied, treated, and prevented. Newman explains that the general consensus on PEM today is that it includes a range of syndromes among children “who display growth and biochemical abnormalities produced by the synergistic effects of dietary deficiencies and various infections. The clinical syndromes are kwashiorkor and marasmus plus a range of mixed types…” (Newman 1995:233). This definition results from over 50 years of study and “was preceded by a much simpler one that focused on kwashiorkor and its presumed cause of protein deficient diets.” That is, much of the research on PEM in the 20th-century focused on kwashiorkor and protein-deficiency to the neglect of other syndromes and less clinically-visible forms of the disease.

With increasing research on kwashiorkor after its discovery in the 1930s, researchers discovered a tremendous variety of clinical syndromes that were difficult to classify. However,
diagnosis relies on precise classification and researchers strove to come up with a typology that accounted for the different observed forms of PEM. This typology most often consisted of kwashiorkor, marasmus, and marasmic kwashiorkor, with a primary research and clinical focus placed on kwashiorkor (at least up through the mid-century). However, as Gopalan suggested in 1968, “‘marasmus and kwashiorkor were the end results of more severe degrees of the same type of protein-calorie deficiency prevalent in the rest of the community’” (cited in Newman 1995:235). The focus was concentrated on detecting and treating the most severe and clinically obvious forms of malnutrition (sometimes past the point of total reversibility), at the neglect of the milder and more prevalent forms. This is a more general effect of the medicalization of hunger which tends to focus on the more severe forms of hunger. Indeed, this tendency continues and Manary et al. in 2009 state that “unlike marasmus, there is not ‘moderate’ or ‘mild’ kwashiorkor whereby we can recognize the condition in its early stages and prevent deterioration to a stage when the condition is often lethal” (Manary et al. 2009:107). That is, particularly with kwashiorkor because of its clinical classification, there is little room for treating the milder forms of malnutrition that lead to what is clinically defined as kwashiorkor. PEM exists on a spectrum and the focus on classifying this spectrum into specific syndromes shifts attention away from the underlying causes of the entire spectrum—insufficient diets and poverty.

The reasons for kwashiorkor’s classification as a syndrome, rather than a disease, are significant and warrant elaboration. There are a set of associated symptoms, signs, and pathologies associated with kwashiorkor but still no consensus on the necessary components of the syndrome, and there remains controversy over the etiology of kwashiorkor. Different pathologies can develop from the same general syndrome called kwashiorkor, and some diseases—especially tropical infections—are thought to play a role in the syndrome’s
development. The classification of kwashiorkor as a syndrome rather than a disease has implications. By recognizing it as a syndrome, it allows for the recognition of a multifactorial etiology but one underlying “core of malnutrition.” Turning the syndrome into a disease leads to intense focus on the specific etiology and leads even more to the abstraction of social and economic causes and consequences. On the other hand, Brock refers to kwashiorkor as an indicator of protein deficiency more broadly, and thus shifts kwashiorkor away from its specific role as a clinical entity toward the idea that this syndrome is one particularly visible consequence of a protein-deficient diet. This recognition also allows for the detection of a spectrum of illness from mild to severe kwashiorkor.

Finally, classifications of malnutrition also shift historically. Heikens and Manary explain that “in the 1970s the emphasis moved away from kwashiorkor and protein…[when] it was realized that wasting and marasmus…were more predominant. The case definitions, and anthropometric classification, became more practical and intervention oriented” (Heikens and Manary 2009:98). Thus the definition of kwashiorkor remained clinically oriented and therefore relatively non-intervention oriented.

Newman also highlights that “the absence of a widely agreed upon classification…hinders understandings of PEM’s prevalence as well as more precise clinical diagnoses…and, most critically, the implementation of effective preventive measures” (Newman 1995:236). The continued absence of a consensual medical classification leads to misconceptions of the syndrome and complicates prevention and treatment policies. For instance, it can lead to a focus on more clinically oriented redefinitions at the expense of intervention oriented classifications. Furthermore, it is possible to trace the links between classification of kwashiorkor and interventions in the past; one particularly poignant association between medically-defined
etiology and humanitarian and medical interventions centered on kwashiorkor occurred during the 1950s.

**The 1950s: “Protein Decade”**

Although Williams “discovered” kwashiorkor 20 years earlier, the 1950s signified a period of intense focus on malnutrition—kwashiorkor in particular—in Africa and the world. Brock and Autret’s 1952 WHO report marked the beginning of this boom in kwashiorkor research and their investigation has been called the “nutritional exploration of the African continent” (Black 1996:64). Brock labeled the 1950s the “Protein Decade” because of the widespread international focus on the nutritional importance of protein (Wylie 2001). UNICEF highlights the 1952 report as the impetus for the Protein Decade because it advanced protein as a dietary medicine (Black 1996).

Kwashiorkor research in the 1950s, led by Brock and Autret’s 1952 report, focused on the importance of protein. Protein was highlighted in two important ways: 1) as a treatment for kwashiorkor in the clinical setting, and 2) as the cause of kwashiorkor when it is deficient in the diet. As Welbourn states: “It is generally recognized that the disease is due to lack of protein in the diet, and it can be cured by the administration of milk or suitable vegetable protein” (Welbourn 1955:34). This was discussed in terms of consensus within Brock and Autret’s report, along with Welbourn and Trowell and other prominent kwashiorkor researchers in the 1950s. Another major component of the 1952 report, which extended to research throughout the 1950s, was the focus on a “nutritional exploration” in which correlations were drawn between diets of particular African regions and tribes and the prevalence of kwashiorkor. For example, Welbourn, in 1955 says: “The Masai on the other hand, whose diet was largely of protein, were superior in physique,” thereby drawing a connection between physical health and dietary protein through the
study of African tribes (Welbourn 1955:35). There were certainly other researchers who disagreed with the protein hypothesis and there were many studies done on other possible causes, such as cassava toxins. However, the combination of Brock and Autret’s influential report and political and international factors led to a general consensus on the role of protein-deficiency in kwashiorkor.

Studies throughout the 1950s highlighted not only the importance of protein to the treatment and prevention of kwashiorkor, but the importance of skim milk specifically. Brock and Autret (1952) state that “…the provision of skim milk is the most valuable form of treatment at present known for established cases of kwashiorkor” (60) and they considered it so effective that Trowell’s terminology of “malignant malnutrition” was no longer applicable. They cite a decrease in mortality to 2.8% following the introduction of skim milk as a treatment. In addition, paralleling their correlation of high-protein diets with low rates of kwashiorkor, Brock and Autret focus specifically on the importance of milk within tribal diets: “Kwashiorkor is not found among the Masai, a pastoral people in Kenya who consume milk, and meat occasionally…It does not exist among the Batussi of Ruanda-Urundi who are livestock raisers and consume much curdled milk” (40). In a more prevention-oriented focus, they highlight reasons why milk yields were often low, even in areas with cattle herds, and propose interventions that could raise the production of milk within Africa. The emphasis placed on protein, and especially milk, as a preventative and curative product for kwashiorkor had widespread effects on interventions throughout the 1950s and since.

In truth, the protein obsession that took off in the 1950s had as much to do with the concurrent economic, political, and social forces influencing public health and nutrition as it did with biomedical research. This report did not originate in a political vacuum and it is important
to frame this research within the international context. The frenzy of interest in kwashiorkor in
the late 1940s and early 1950s was not merely a consequence of scientific curiosity prompted by
Cicely Williams; rather its eruption was partially a consequence of World War II. The war had
transformed how people thought about food and contributed greatly to nutritional science. As
Wylie explains:

Men with experience in relief operations in postwar Europe now assumed important
positions in the World Health Organization (WHO). The American physician Nevin
Scrimshaw…had seen emaciated children in Europe and, subsequently, in Guatemala,
and helped to push protein issues high on the agendas of the new United Nations
organizations concerned with world poverty. (2001:155)

One of the first important health topics discussed within the newly developed WHO was
kwashiorkor. Indeed, Brock and Autret’s investigation of kwashiorkor in Africa marked one of
the first WHO-sponsored major health assessments. There were other international actors besides
WHO that played a role in the interest in kwashiorkor: “In the late 1950s, UNICEF added
$100,000 to the $250,000 given by the Rockefeller Foundation to WHO’s Protein Advisory
Group, its purpose ‘to advise on the safety and suitability of proposed new protein-rich food
preparations’” (Wylie 2001:155). That is, not only did kwashiorkor research receive an
international boost by the war, but the Protein Decade of the 1950s was clearly based on a
broader international interest outside the medical community.

Many international actors had a vested interest in protein provision to the developing
world and their role was critically important to the “protein fiasco.” Newman (1995) uses
“protein fiasco” to refer to the obsession with the provision of protein to combat malnutrition. As
noted previously, much of this protein came in the form of donated skim milk from the U.S.,
interventions within developing nations to increase milk production, and the commercialization of manufactured high-protein “foods” to solve malnutrition. These interventions had tremendous consequences beyond their intended target; as mentioned previously, Heikens and Manary highlight some of these consequences:

Skimmed milk was sent as humanitarian assistance to the poor children, from mainly subsistence and hardly surviving farmers, in Africa. The remaining butter mountains in Europe and the USA led to new subsidies, wealthy farmers and highly mechanized inequity in the world. African small holding farmers were unable to produce competitively locally, as well as on the world market… (Heikens and Manary 2009:97)

Indeed, protein provision in the form of skim milk was more than a charitable reaction to the reports produced by kwashiorkor researchers highlighting widespread protein-deficiency. The many international agencies and actors with ties to the skim milk industry ultimately motivated the Protein Decade well beyond that of the researchers who first highlighted the relationship between protein and kwashiorkor.

Although these other actors greatly influenced the rise of the Protein Decade, it cannot be overlooked that biomedical research, through the very definition of kwashiorkor, played a key role in prompting interest in protein. With regard to disease classification and definition, it is clear how linked theory and practice can be. For this reason, the example of the protein fiasco complicates the idea that the re-problematization of malnutrition through science steers society away from action and into continued research. If definitions are incorrect or oversimplified, this can directly extend to oversimplified, incorrect, and harmful interventions. If protein deficiency (or lack of milk, specifically) was not the sole cause of PEM (which it is not) then this “protein fiasco” was not only misguided but potentially harmful. Overall inadequate calories and co-occurring infections, not to mention poverty and food insecurity, are also important to the development of PEM and by focusing solely on protein, these factors were ignored. This is
where the definition of kwashiorkor and other forms of PEM are so important, precisely because science and biomedicine have concrete effects through practice and policy. As Newman mentions:

…the history of medicine is replete with error. While error is part and parcel of science, errors in medical knowledge may have enormous human consequences because that knowledge is almost immediately applied. This is especially true in the late twentieth century when quick technological fixes and the lure of large research grants and fame have become such prominent features of the scientific quest. (Newman 1995:240)

Theory does not exist detached from practice and we have seen the negative effects this can have, especially when there are errors in science. However, this does not simply imply that good theory equals good practice; indeed it is the flaw of technocratic hubris that assumes that textbook solutions can be replicated in the “real world” without consideration for all the complexity that exists in society. It is not only problematic that scientific error can become replicated through erred practice, but also that scientific solutions themselves are not directly transferable to practice.

The stimulus of the protein obsession was not necessarily that researchers drew oversimplified conclusions between protein deficiency and kwashiorkor; on the contrary, many researchers understood the fundamental causes of disease. Newman suggests that investigators overlooked the, “research demonstrating PEM's symptomatic and etiological complexities, creating thereby a ‘protein fiasco’ which allegedly wasted time, money, and, more importantly, lives” (Newman 1995:233); however, it is critical to acknowledge that other actors besides investigators harped on the protein aspect and sought technical solutions. It was not that research was wrong and pointed solely to protein as the cause of PEM, but rather that the interactions between society and science produced oversimplified conclusions about a complex disease. Both researchers and policymakers missed or chose to overlook the underlying social, political, and
economic causes of PEM in favor of purely technical solutions. This example also highlights a particular historical event in which the socio-political climate and biomedical research on malnutrition came together in a particular way with unforeseen fervor. This underscores the point that there is much for us to learn from this history because “many uncertainties about PEM remain, and these leave room for continuing errors…” (Newman 1995:233).

Anti-protein hypotheses

Partially in retort to the simplicity of the proposed link between protein and kwashiorkor, and partially as a natural continuation of scientific investigation, there have been many studies examining alternative causes and etiologies of kwashiorkor, such as aflatoxins, cassava toxins, co-occurring infectious disease, and overall calorie deficiency. One leader in this charge was Michael H. Golden who conducted studies in Jamaica that showed that lack of protein neither causes edema nor that protein given as a treatment resolves edema (Golden 1998; Heikens and Manary 2009). One of the most interesting hypotheses in relation to the broader social context and history of kwashiorkor is the proposed relationship between cassava and kwashiorkor.

Cassava

Cassava is a staple throughout the tropical world, with over 800 million people depending on it in 2010—the third largest contributor to the global calorie budget, after wheat and rice (Burns et al. 2010). As explained in chapter 2, cassava has been grown as a famine food because of its insensitivity to drought and disturbances, and this is one of the reasons for its high production in the tropics. Cassava is very low in protein, even compared to other carbohydrate staples like rice and corn (Brock and Autret 1952). In addition, all cassava tissues contain cyanogenic glucosides which can be transformed to hydrogen cyanide and cause acute poisoning (Kamalu 1993). Throughout the world, people process cassava in order to get rid of this
substance, but there are always residual amounts found. Researchers hypothesized a relationship between cassava consumption and kwashiorkor because of cassava’s very low-protein content. For example, Brock and Autret’s 1952 report refers to the association between prevalence of kwashiorkor and diets reliant on cassava:

‘gari’ [processed cassava] can be shown to have an almost constant relationship to the incidence of the syndrome where it is eaten to excess in the absence of protective foods. To a lesser extent this holds also of ‘cassava foufou’…Some authorities think that the consumption of manioc [cassava] is the principal cause of kwashiorkor.’ (41)

Others have suggested the role of the cyanogenic glucosides in contributing to the development of kwashiorkor.

Kamalu, in an article in 1993, discusses the influence of cassava consumption on the development of kwashiorkor in an experimental dog model. This model was used to determine the effects of cassava (and its cyanogenic glucosides) on growth, cellular edema, kidney function, hypoinsulinemia, and so on. Her experiments show an association between some of these signs of kwashiorkor and cassava toxins; however, this hypothesis cannot fully explain this syndrome because many people with kwashiorkor do not eat cassava. Nevertheless, this study is important because it is just one of many to suggest a link between cassava and kwashiorkor and highlights the struggle to find the precise etiology of kwashiorkor. Also, the experimental model used exemplifies the scientization of kwashiorkor because it completely removes the syndrome from its social, political, and economic context.

The proposed connection between cassava and kwashiorkor is especially significant in light of the discussion of the history of cassava provided in chapter 2. Brock and Autret also note that:

It is easy to understand why the cultivation of cassava, a crop which demands little labour, gives large yields, and is relatively resistant to the vagaries of climate, should have been encouraged. But in the attempt to avert famine—in pursuit of what has
sometimes been regarded as a foresighted agricultural policy—cassava has been
cultivated to such an extent that it is becoming the staple food in may territories. This is a
dangerous situation. It is essential to encourage, wherever soil conditions permit, the
production of cereals, which are richer in protein than cassava, or of other roots and
tubers, also superior to cassava in protein content. (Brock and Autret 1952:53-54)

By 1952, there was an acknowledgement of the danger of overreliance on a single crop, and
especially on a crop so lacking in protein as cassava. Brock and Autret even acknowledge that
the promotion of cassava cultivation was ill advised. However, they do not highlight the political
and economic events leading to the widespread reliance on cassava and in that way, they remain
apolitical in their assessment. They also don’t mention that the cereals that they promote were
often the native crops which agricultural policies promoting cassava destroyed. They do note that
cassava is not native to Africa but provide no further historical statements.

The lack of historical perspective in their discussion, as well as the general lack of
historical discourse on the subject of kwashiorkor, illustrates Trouillot’s notion of “silencing the
past.” This facilitates the re-interpretation of history in biomedical discourse. When researchers
spend pages describing the ignorance of the African people who live solely off cassava and
maize and never make a link between imperialism, poverty, famine, and malnutrition they do
more than ahistoricize kwashiorkor; they create the image that it has always existed. This leads
to statements like: “Kwashiorkor has always been prevalent in the Kasai Province of South-East
Congo” (Yarom and McFie 1963:56). At the time when kwashiorkor was defined as a maize, or
manioc, disease, this was obviously an incorrect statement because both are New World crops.61
But this is how easily histories and facts get silenced. In this case the silence on pre-imperial

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61 For a discussion of the introduction of maize to Africa see: McCann, J. C. 2005. Maize and Grace: Africa's
African diets has enabled those in power to create their own version of the past—the history of a primitive Africa—in the written record’s absence.

**Social Model of Kwashiorkor: Pathologization**

The problems associated with scientization and an emphasis on classification, etiology, and technical treatments do not only become apparent through research results and interventions. Biomedical discourse and its incorporation of social themes and prejudices into the language of science can shape how subjects of research are portrayed and constructed. Again, it is not necessarily the intentions or interests of researchers that are at fault, but the framing and presentation of questions and findings. Scientific discourse depoliticizes problems by removing the political from the cause and solution. At the same time it has political and social consequences. Throughout the prominent reports on kwashiorkor in the mid-20th century, there appears a general thread regarding the pathologization of “the African.”

The study of kwashiorkor prompted global attention to malnutrition; however, it maintains a complex relationship with Africa. Kwashiorkor was discovered in Africa, it retains the African name, and in many ways it is still considered an African disease despite its global prevalence. The study and rhetoric of malnutrition are ultimately linked to the pathologization of “the African,” whose legacy contributes to depictions of starving children and famine, as well as the common expression: “Finish your plate. There are children starving in Africa.” The frenzy of interest in research on kwashiorkor in Africa has influenced the image of hunger in Africa more generally.

One of the common ways in which kwashiorkor was framed in Africa (especially South Africa) was through the fear of race deterioration (see chapter 2). As Wylie explains:
“Kwashiorkor…aroused the diffuse fear of race deterioration that experts had been articulating at least since the turn of the century. It reinforced anxieties over the adequacy of the country’s future labor supply that had sent Fox and Back on their journey around the Transkei in 1937” (2001:155). Kwashiorkor was not the first form of malnutrition through which fears of race deterioration were elicited, but it certainly became one of the most prominent. Along these lines, the research on kwashiorkor contributed to the ignorance paradigm, in which Africans were considered to suffer from malnutrition due to their ignorance and culture.

Through this frame, some of the major reports of the 1940s and 1950s serve to reject local knowledge and blame on African ignorance. For example, Brock and Autret write: “the children of these parents were asked whether this [hair] colour [de-pigmentation] was natural and they unhesitatingly replied that it was an effect of the recent famine and that it would be restored to normal colour as their food improved. This opinion came from uneducated and ignorant peasants” (Brock and Autret 1952:12). The blatant rejection of local knowledge by those who presumed “expert knowledge”’ is striking, especially given that researchers knew that local understanding of the disease was widespread (Williams 1933; Trowell 1949; Brock and Autret 1952).

The burden of perceived ignorance, blame, and racial difference lands especially hard on African women. In William’s first report on kwashiorkor, she emphasizes the role of improper weaning and feeding of infants (Williams 1933). She claims that “the African woman lactates profusely” and that the milk was probably of poor quality and states these as causes of malnutrition, which she considered the most serious children’s health problem in the Gold Coast. She also makes note that in the Gold Coast, “there is little poverty” and that the “land is not unfertile,” which leaves little room for explanations of high kwashiorkor rates beyond blaming
mothering practices (Williams 1938). Brock and Autret also discuss the role of improper weaning in kwashiorkor at great length: “Throughout Africa (except among a very small group of educated Africans) breast feeding is given ‘on demand’ rather than according to a time schedule” (Brock and Autret 1952:32). This suggests that only with Western education do Africans know how to properly take care of their children. They further explain that “…African infants after weaning pass abruptly to a diet composed of ordinary foods of the family… in contrast with infants of western civilization who pass by degrees from a regime of breast milk to a maize diet through the introduction into their diet of carefully prepared and selected foods…” (32). Brock and Autret do not acknowledge that lack of access to these carefully selected foods may be the reason they are not common in Africa. Instead they conclude that “energetic educational measures” (59) are necessary for reducing kwashiorkor, which is a commonly cited “solution” to the ignorance of Africans (mothers, especially) in the 1950s. Moreover, the language of the ignorance paradigm is not just reserved for the mid-20th century; in her 1996 biography of UNICEF Black says: “Unicef's attention became more focused on the needs of children in poor and backward parts of the world” where malnutrition was “a condition induced by inadequate feeding of the young child, partly out of ignorance” (Black 1996:64-65). The repetition of this language serves to reinforce the ignorance paradigm (and its racial overtones) linked to malnutrition over the past century.

In response to the ignorance paradigm, there is a common emphasis placed on education within the medical discourse on kwashiorkor. Welbourn highlights the conflict between technical and educational solutions to kwashiorkor in his 1955 report: “We had continually to be on guard

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62 The lack of special weaning foods is particularly striking when compared to the writings of Weston A. Price (1970) who was amazed by the specific foods given to women who were pregnant, breastfeeding, and weaning their children. This is one of the key aspects of traditional diets in Africa that he pointed out as a source of wisdom for the West.
against treatment taking precedence over education. One clinic which was becoming too ‘medicine conscious’ had to be closed. Sometimes we found that ‘forgetting’ our medicine box on one or two occasions had a salutary effect” (Welbourn 1955:39). Welbourn recognized that technical solutions to kwashiorkor could be misguided and harmful in the long run, however, his focus on education still neglected the underlying lack of access to food and changes in local foodways. In the context of minimal agency to improve their diets, such education further served to place the burden of kwashiorkor on Africans. Education, in this case, is an agentic intervention in that it depends on an individuals’ response to have an effect, however it does not address the structural issues that ultimately limit the options available for people to make behavioral changes (Burris 2011). In this way, education can deflect attention away from the structural causes of hunger by ascribing the problem of malnutrition to African behavior, thereby reducing the likelihood of policy changes.

The above themes of ignorance and education highlight the emphasis placed on African culture as the cause of kwashiorkor and the continued racialization of malnutrition. Race—whether culturally or biologically constructed—remained entrenched in scientific discourse on kwashiorkor in the 1950s. The primary categorizations through which researchers approached kwashiorkor etiology are laid out when Brock suggests that diet and weaning practices varied by “locality, race, tribe, agricultural methods and resources of the soil” (Brock and Autret 1952:36).

Biological interpretations of race also appeared in kwashiorkor research through the 1950s. Brock and Autret explain that “Davies is at present studying the pathology of the liver of the American negro to satisfy himself that the degree of fibrosis seen in Kampala is not characteristic of the negro race” (Brock and Autret 1952:26). Likewise, Walker and Squires during the same year, inquire in a letter to the British Medical Journal regarding
the various abnormalities…encountered among these people [Africans]—in the biochemistry of the blood protein picture, in liver function tests, in carbohydrate metabolism, in the excretion of ketosteroids, and so forth…What are these abnormalities due to? So many factors could be involved—for example, racial differences; acute episodes of unsatisfactory feeding (for example, at weaning time); chronic undernutrition and malnutrition; habituation to a high cereal diet very low in animal protein; chronic malaria…[etc.] (Walker and Squires 1952:1096)

They not only cite racial differences as a possible cause but propose a study of “healthy Africans,” which they claim to have discovered in one very isolated set of villages in the Kalahari desert, in order to assess “normal” African biochemical measures (and determine whether race is a factor). Not only is it significant that they had to search so far and wide to find “healthy” Africans, but the fact that biological proof was needed to rule out the possibility that the African race was predisposed to malnutrition shows how race and biology were entwined in the 1950s. The rationalization of kwashiorkor stemmed from the presumption that the categorizations of tribe, race, and geography were potential causal factors of malnutrition.

Also related to investigations into the racial basis of malnutrition is the emphasis that Brock and Williams place on the deficiencies of African mothers’ breast milk. They suggest that there are racial differences in breast milk—lower protein and higher fat content in African compared to European breast milk—which may cause kwashiorkor. The notion that lower levels of nutrients in African breast milk would be due to the inadequate diets of African women because of poverty and inequality is mentioned only briefly. In fact, Brock and Autret only mention poverty in their notes on prevention: “Dietary errors due to poverty and ignorance are a causative factor” and re-emphasizes that “while kwashiorkor is due to poverty, much is also due to ignorance” (Brock and Autret 1952:51).

Although many researchers from the 1950s refer to discourses on race, the proposed racial basis of kwashiorkor is not a universal theme in the literature. For example, in a 1952
article, Trowell and Davies say that African birth weights are often lower than those of Europeans, and there are good grounds for believing this to be due to the poor economic and nutritional status of the mother rather than to any racial variation (Trowell and Davies 1952). Welbourn agrees and suggests although “it has been stated that the small size at birth of the African infant is a racial characteristic…it is probably more a reflection of the mother’s poor state of nutrition during pregnancy” (Welbourn 1955:42). He even claims “in some ways the Muganda baby actually seems to be at an advantage compared with the European during the first month or two of life” (42). He goes on to cite two studies that showed infant birth weights in the U.S. and South Africa were proportional to family income and class, not race. This explanation for low birth weight that uncouples race from socioeconomic class is a progressive insight that diverges from earlier papers.

These researchers also acknowledged the role of poverty and socioeconomic factors in the lack of access to sufficient weaning foods. Trowell and Davies (1952) explain the relationship between poor quality and protein-deficient weaning foods and the development of kwashiorkor but they acknowledge that protein was often “scarce and expensive,” “difficult to obtain,” and that “shortages [were] inevitable” In addition, they acknowledge that the mother’s breast milk may be deficient due to poverty. Welbourn, in his article on weaning and kwashiorkor mentions that “many of the men go off to work in the town each day” and that the “cost of living and shortage of housing in the town are such that children of town families seldom stay with their parents for long after they are weaned” (Welbourn 1955:37). Both of these statements highlight socioeconomic context in which Welbourn must have seen some connection to kwashiorkor. In his study, he attempted to measure socioeconomic status by dividing children into categories which included education and standard of living.
As we saw in chapter 2, research by Hansen and Brock and Autret also highlighted the influence of low wages, poverty, and land distribution to the incidence and prevalence of kwashiorkor; however, they abstained from drawing political conclusions. Their conclusions, along with those of Trowell, Davies, and Welbourn, were ostensibly apolitical because there was no mention of the factors contributing to low wages or arguments made for increasing them, and this is a political stance in its own right. Although it became increasingly common to recognize the role of socioeconomic circumstances in the development of kwashiorkor, it was also common for researchers and physicians to remain ostensibly apolitical. As mentioned previously, this is not necessarily the intention of individual physicians or researchers who are beholden to institutions for funding. For example, Hansen adopted an apolitical stance and “just reported the facts” in order to continue to receive research funding after being labeled a Communist by the Afrikaans press in South Africa because he published findings linking poverty and malnutrition (Wylie 2001). It is not the foremost responsibility of physicians to be political advocates, however, when diseases are medicalized, they are also often depoliticized and it is critical to be aware of how biomedicine is complicit in this process.

**Contextualization**

Historical context is important for understanding kwashiorkor research in Africa because it highlights the relationship between politics and research. Randall Packard describes the situation on the native reserves in South Africa before WWII, at the same time that Williams was conducting her first research on kwashiorkor: “Widespread impoverishment, malnutrition and disease were reported in some areas by World War I and within most reserves by the late 1930s, with conditions being most severe in the Ciskei and Transkei areas of the eastern Cape” (Packard
Packard describes this as a direct consequence of the government’s intention to create native reserves in order to dispossess the natives of their land so that they were forced to rely on the wage economy through migrant labor. This political maneuver created widespread impoverishment, ecological degradation, and hunger, at the same time that the language of “legitimization” by the government sought to paint a picture of healthy reserves. It is not by chance that this was the same period as kwashiorkor was discovered. Nevertheless, this political context was ignored when Williams described the inadequate breastfeeding techniques of African women as a cause of kwashiorkor and others blamed African genetics and lack of education for their susceptibility to kwashiorkor. Clearly, the context in which researchers write significantly affects the conclusions they draw. Though doctors may not have intended to create a language of legitimatization to enable these reserves to persist as such, they were complicit when they neglected to frame hunger in a language of poverty and oppression but rather medicalized it.

This example shows how providing historical context to the ahistorical discussion of kwashiorkor that appears within the biomedical literature paints a different picture than that portrayed in the literature alone. It is important to analyze scientific discourse as removed from its social context because this is how it is presented within the scientific language, however, it is also important to recontextualize the discourse. Science and medicine have a history and one which is critical to how discourse is created and framed and this too must be considered. It is important to re-contextualize biomedical discourse in order to elucidate how it depoliticizes malnutrition, not just what this depoliticization causes.
To further contextualize the biomedical discourse on kwashiorkor in Africa discussed above, I will provide a more detailed background of two of the most famous kwashiorkor researchers. The first such researcher is Cicely Williams.

**Historical context of Cicely Williams as physician and researcher**

Williams was the first to bring the condition called kwashiorkor to the larger scientific community and many of her observations and conclusions remain relevant today. One feature that made her stand out in her time was that her publications on kwashiorkor had a strong social basis. She understood that the term originally meant the illness of the deposed child and she likewise situated the causes of kwashiorkor within the family, and especially in regards to the mother. She emphasized the need to talk to women, in particular, about their children’s health and placed much responsibility on mothers for their children’s development of kwashiorkor, but possibly not as much blame as her contemporaries.

However, Williams was not anti-colonial and she often portrayed African mothers negatively. Stanton mentions: “she was critical of what she saw as the indulgent, unregulated regime adopted towards young infants...she likened mothers playing with their babies’ beads to neurotic chain smokers, and ascribed adults having an infantile craving to have something always in their mouths to their constant snacking as infants” (Stanton 2001:156). She tended to toe the line between advocating for socioeconomic and for behavioral causes of the high childhood morbidity and mortality she encountered. Stanton explains that:

…on one hand she indicated poverty was the underlying cause, giving a radical prescription: ‘The function of a medical department conducted by any government is to raise the standard of living rather than to provide orthodox medical attention for the individual.’ On the other hand, she held that the ‘unspeakable’ loss of health and life among children was ‘all due to ignorance and dirt and disease.’ Her unifying theme was the need for civilization. (Stanton 2001:158)
While Williams’ views on maternal ignorance and childrearing skills were problematic at times, she also led the way as a “primary health care pioneer” and became a lifelong advocate of maternal and child health. Her research on childhood malnutrition and her acknowledgment of the need for a combined approach to its alleviation because of the existence of both socioeconomic and social causes of malnutrition were influential to those who followed in her footsteps. Partially because of her role as a “primary health care pioneer” and the fact that she was a woman in a male-dominated profession, others were not quick to subscribe to her discovery of kwashiorkor as a clinical entity and her notions of its etiology. Many doctors and researchers challenged her interpretation of kwashiorkor and focus on maternal and child care, and some even “seemed incensed by her adoption of a ‘native’ word for the condition” (Stanton 2001:159). Thus, even though her language and understandings may sound conservative now, others’ opinions on her research focus reflect how progressive she was.

**Historical context of Brock as physician and researcher**

Similar to Williams, Brock has been considered a progressive advocate of primary health care and community medicine, however, his discourse on kwashiorkor was also often problematic. As Wylie notes, Brock had a lifelong commitment to social and community medicine as instilled by his work with Professor Ryle at Cambridge. He believed that “nothing contextual was irrelevant to health” (Wylie 2001:156). However, his beliefs and discourse may have been progressive for his time, but they were still influenced by the politics and rhetoric around him. On his first trip through Africa with Fox in 1949:

Brock noted that ‘Africa has been backward in applying existing knowledge of nutritional science to the welfare of mankind,’ its agriculture ‘wasteful and inefficient’; ‘apathy, ignorance and superstition’ had led to ‘starvation in the midst of plenty’...he noted the need to conserve soil resources in the South African reserves rather than allow them to be depleted by ‘primitive agriculture and the effects of the lobola system on pastoral methods,’ an allusion to overstocking. (Wylie 2001:157)
Although he did refer to inadequate land and wages; he steered clear of political implications. During his next trip across Africa, as part of his famous investigation of kwashiorkor with Autret, “Brock would once again address the question of ‘backwardness,’ but now saw it as an effect rather than a cause of malnutrition” (Wylie 2001:157). Perhaps because he already had some familiarity with Africa, on his second visit Brock was able to erase some of his initial prejudice and recognize the fundamental causes of malnutrition not related to culture.

All in all, we can see how Brock and Williams’ discourse on kwashiorkor cannot be decontextualized from the concurrent political and social context in which they wrote, without misinterpreting their positions in the medical community and their understandings of the syndrome. However, this decontextualization is precisely what occurs when biomedical papers are read without a background primer on the historical context of the disease and the researchers themselves do not make political suggestions. Arguably, doctors should take on the responsibility of being political advocates because they are the most intimately aware of the causes of disease, but this is rarely the case and medical researchers more often than not are complicit in the depoliticization of disease. Again, this is sometimes beyond the intentions of individual physicians who are beholden to the ostensibly apolitical (but evidently political) position of institutions that provide funding. Although it is interesting to note the context of the discourses, it is also important to remember that it is precisely this depoliticization by scientific discourse that is problematic to how diseases are approached and interventions shaped.

The Legacy

The scientization of malnutrition and pathologization of Africans in biomedical reports on kwashiorkor was common from its discovery in the 1930s through the mid-century, and these
historical discourses extend into current medical rhetoric. As we saw earlier, the current medical definitions of kwashiorkor contain vestiges of research themes from the past century. Moreover, there is still substantial research being conducted on kwashiorkor and numerous review articles highlighting the history of the syndrome. The current discourses reflect the continuation of trends from throughout the 20th century, and provide an illustration of the contemporary explanations of kwashiorkor in the medical community.

The 2009 report, “75 Years of Kwashiorkor in Africa,” suggest that “the etiology of kwashiorkor remains an enigma, and is likely to be multifactorial” (Heikens and Manary 2009:97). The authors proceed to debunk the relationship between protein and kwashiorkor and summarize the research done to try to determine the specific etiology. They underscore the importance of calorie deficiency in severe malnutrition and the role that protein obsession has had in obscuring this connection; they refer to the self-interest of U.S. researchers who promoted the provision of surplus U.S. milk, and they criticize researchers for “still focussing on the clinically fascinating and epidemiologically less prevalent forms of oedematous malnutrition” (98). However, in the end, they return to the status quo of kwashiorkor in the biomedical world, “Part III [will address] the studies which are needed to define, in another attempt, the precise aetiology of kwashiorkor in order to develop more effective preventive strategies” (98).

In “Reconsidering Kwashiorkor” (2011), Snezana Nena Osorio also describes past and present research on kwashiorkor: “over the past 20 years, our knowledge of the pathophysiology of kwashiorkor has evolved. Clinical, epidemiologic, biochemical, and toxicological studies have questioned the assumption that inadequate protein intake was the primary cause of kwashiorkor” (11). She also suggests the use of a “more accurate description of kwashiorkor [that] is consistent with newly proposed ‘etiology-based’ diagnoses” (12). This highlights the enduring emphasis on
biomedical research of etiology and on definitions of malnutrition. Both articles stress discrediting the ingrained belief that protein deficiency causes kwashiorkor by suggesting the role of calorie-deficiency, free radicals, aflatoxins, or vitamin deficiencies. This discourse acts to disregard the larger picture in which, ultimately, kwashiorkor is caused by malnourishment and more specifically diets of the poor.

Michael Krawinkel discusses the current prevalence and history of kwashiorkor in “Kwashiorkor is Still Not Fully Understood” in 2003 (Krawinkel 2003). The title reflects the uncertainty still associated with kwashiorkor and he emphasizes that “the 90% mortality reported in 1935 has declined — but by nowhere near as much as one could have expected…it is still true that most children die after initiation of treatment” (910). Although he concludes that knowledge about kwashiorkor needs to be continually reconsidered, he criticizes the emphasis on biomedical research:

Most research on nutritional concepts has focused on biomedical aspects — pathogenesis, symptomatology, clinical course, and cell, tissue and organ failure — and appropriate medical care; research on social aspects is far less prominent, even though care for families with a child suffering from kwashiorkor has the potential to prevent and manage the disease effectively. Concentration on pathological and physiological factors and curative medical care takes only a short-term view... (910)

This last paper demonstrates that there are alternative discourses on kwashiorkor in public health and biomedicine; however, the primary focus is still on the medicalization of malnutrition as removed from its social context.

**Conclusion**

This chapter has elucidated the process and consequences of the medicalization of kwashiorkor over the past 75 years. What was once considered a social illness caused by ill-spaced births and lack of access to quality weaning foods is now largely considered to be a
biochemical pathology. Kwashiorkor has become scientized and depoliticized through biomedical research and emphasis on precise etiology, classification, and treatment. In Rosenberg’s book, *Framing Disease*, he says:

…disease is at once a biological event, a generation-specific repertoire of verbal constructs reflecting medicine’s intellectual and institutional history, an occasion of and potential legitimation for public policy, an aspect of social role and individual—intrapsychic—identity, a sanction for cultural values, and a structuring element in doctor and patient interactions. (Rosenberg 1992:xiii)

By looking at the history of kwashiorkor through the lens of biomedical literature, we can recognize the nuanced constructions of disease that are missed through a purely biomedical framework. This also illuminates the consequences of the scientization of malnutrition, not just on those who are malnourished, but also on constructions of Africans and of hunger throughout the world.
Conclusion

“...the condition of truth is to allow the suffering to speak. It doesn’t mean that those who suffer have a monopoly on truth, but it means that the condition of truth to emerge must be in tune with those who are undergoing social misery—socially induced forms of suffering.” -Cornel West (1993:4)

In this thesis I have traced the history of (primarily) 20th century scientific discourse on malnutrition and kwashiorkor in Africa. I focused especially on the rhetoric, as well as the processes and consequences, surrounding the medicalization of hunger. These consequences include both the persistence of malnutrition in Africa, as well as problematic (and enduring) representations of Africans. My two guiding premises for this thesis, laid out in the introduction, include 1) the effects of medicalizing hunger (as malnutrition) on how hunger is studied, framed, and responded to, and 2) the history of representations of Africans and Africa that appear throughout the scientific discourse on malnutrition.

Beginning with the question of why there remains such a strong association of hunger with Africa, I have sought to show how scientific discourse has contributed to this depiction. We have seen the various ways in which scientific language and the frameworks of scientific inquiry have represented Africans and how these depictions have changed (or remained the same) over time. In regard to this latter point, the historical approach has allowed us to trace current trends within scientific and popular discourse on malnutrition back in history to understand from where these ideas originated and to follow their trajectories. This is critical because, as we have seen, historical discourses do not remain in the past and continue to influence how we think about
hunger and malnutrition in the present. In addition, although representations in the literature are
decidedly social constructions, they have materiality, as indeed all discourses do. A current
example is the discourse on the obesity epidemic in the United States, which many have argued
has contributed to the stigmatization of overweight individuals, specifically targeting racial
minorities (Herndon 2005; Saguy and Almeling 2008). Scientific research creates discourses
which extend beyond the scientific community and, when not scrutinized carefully, have the
potential to (re)produce detrimental representations and contribute to unintended consequences.
This makes a clear argument for why we (as scientists, journalists, politicians, the public, etc.)
need to be cognizant of the way in which research questions and results are framed. A case in
point is the current need to continuously problematize the depiction of race (especially in regards
to genetic determinants of disease) in scientific literature.

With regard to the first guiding premise of this thesis, the medicalization of hunger as
malnutrition also has effects on how we study, frame, and respond to hunger. As we have seen,
depoliticization and technologization often accompany the process of medicalization, which
means that “political decisions are on the whole replaced by what David Campbell calls ‘a
programme, technology and its irresponsible application’” (Edkins 2000:156). Hunger is the
product of poverty, shaped by political economy and unequal power relations, and is not a
problem that can be solved with merely technical solutions. Although it is true that scientization
leads to depoliticization, the search for technical answers and reliance on experts is also political,
however, less explicitly so, and it supports the powerful, not the suffering (Edkins, 159).

This thesis has focused on the analysis of scientific discourse, but it is critical place this
analysis within the broader context of global political economy and the configurations of
structural violence and inequality. We must first acknowledge that, as Edkins emphasizes, hunger is not an accident and a problem outside of our modern world that must be solved by making regions (and people) modern; rather, hunger, like famine, is part of our capitalism-based world. Many have argued that neoliberalism—specifically the economic ideology and policies promoted in the 1980s and 1990s by global governance institutions like the IMF and WTO—have influenced health through the persistence and concentration of poverty and inequality throughout the world (Farmer 2005). African countries, almost as a whole, were forced to comply with IMF and World Bank prescriptions and many today (including the World Bank itself) have seen the results of these policies and labeled them a failure (World Bank 2005). That is, a failure in terms of perpetuating widespread poverty and heightening inequalities, both of which greatly impact malnutrition. For these reasons, it is critical to embed the argument of this thesis within the social, political, and economic framework of globalization. However, neoliberalism is even more critical to the argument of this thesis than for providing context.

Neoliberal policies and structural adjustment programs (SAPs) imposed on African countries were based on technocratic decisions and textbook solutions (Harvey 2005). The problems with neoliberal policies largely stemmed from technocratic hubris; economists assumed that textbook solutions to nations’ economic woes could be implemented as such. They failed to take into account imperfect markets and complex social and political structures and ties.

63 Many have written about the inequalities created and perpetuated by capitalism. “For Zizek, drawing on Hegel, universal abundance is impossible, since in capitalism ‘abundance itself produces deprivation.’ Excess and lack are structurally interdependent in a capitalist economy. The system produces both together. Some live in abundance and plenty while others live in scarcity and deprivation” (Edkins 2000:124). This argument, drawing heavily on dependency theory, is important because it emphasizes the structural relationship between capitalism and inequality. However, as a structural approach, it neglects human agency and political will. There are opportunities for redistribution and welfare systems which lessen the impact of harsh free market principles. Dependency theory is a theory of economics, development, and globalization that emerged from Latin America during the 1960s and builds off of world systems theory (see: Wallerstein) and Marxist theory. It emphasizes that globally nations are interdependent but unequal, and that the global north has developed and progressed at the expense of the global south. In particular, it emphasizes structural asymmetries of power. See: Smith, T. (1979). “The underdevelopment of development literature: the case for dependency theory,” World Politics, 31 January, pp. 247-88.
in the real world. Thus, scientific hubris and the search for technical fixes to societal problems extend well beyond malnutrition, public health, medicine, and agriculture; these ideas are incredibly pervasive and can be widely destructive. Neoliberalism and the medicalization of malnutrition can both be seen as effects of the postwar pride in the power of scientific thinking to cure social ills.

Throughout the thesis I have shown examples of discourses that relate hunger with pre-modernity and lack of science. Indeed, the narrative of hunger as failure of modernity remains strong and relates directly to development strategies (like the SAPs) that aimed to link nations to the globalized economy and modernize underdeveloped nations. It is critical that we challenge this narrative of hunger as failure and also challenge the notion that the global north has the tools to solve hunger in the global south. As we have seen, there has been a long history of ignoring the voices of those suffering from hunger (seen as non-experts) and even blaming them for their own hunger. It is said that those who suffer from hunger exist in exclusion because they live on the fringes of the world food regime and are often excluded from their social, economic, and political rights. Moreover, as Kalofonos says, “Hunger has both a physiological basis and an existential dimension, as talk of hunger expresses an embodied sense of exclusion [emphasis added]” (2008:199). This double sense of exclusion on the part of the hungry argues even more strongly against their continued exclusion from the scientific discussion of hunger.

Now the question remains: What do the findings of this thesis mean for the reality of malnutrition in Africa and the role of science? Because it is common to refer to malnutrition in the frame of scientific discourse, it seems at once difficult and unhopeful to suggest that there are no technical fixes to malnutrition. That in itself is the appeal of technical fixes; they are
considered effective, fail-proof and superior to social and political “answers.” However, overreliance on technical solutions has only contributed to the perpetuation of malnutrition because it distracts from the structure of the international food regime and political system that allows kwashiorkor, and other consequences of hunger, to persist in Africa. But science does not have to disembend diseases from their sociopolitical context and shift attention from prevention; as McDermott (1998) says: Good science is “ethical science which is followed by appropriate public action.”

As Edkins argues in her book on concepts of famine, the issue of hunger needs to be repoliticized. Hunger requires political decisions based on deliberation and communication,64 not technical solutions based on quantitative data and programs. Malnutrition cannot be framed as a problem that requires solely experts—agricultural scientists, doctors, and development scientists—and technical solutions—biotechnology, medicine, and development programs because this perpetuates inequalities and has failed as the historical status quo. Global political responsibility and international dialogue among both experts and non-experts, with the aim of taking purposive action, is needed.

The reliance on experts and the hubris of science as expert knowledge are themes that I refer to repeatedly throughout the thesis. Privileging expert knowledge often has the effect of supporting the powerful rather than the suffering. However, experts clearly have a critical role to play. For example, in the previous chapter I argue for the role of physicians and medical researchers as political advocates. At the very least, as Paul Farmer says, “…charity medicine

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64 The type of political discussion I refer to is what Jürgen Habermas, German sociologist and intellectual, calls communicative rationality; that is, argumentative communication based on reason and in search for mutual consensus between actors and groups that see each other as equals. Habermas, Jurgen. The Theory of Communicative Action: Reason and the rationalization of society. Beacon Press, Boston: 1984. And see: Risse, Thomas (1999). International Norms and Domestic Change: Arguing and Communicative Behavior in the Human Rights Area. Politics & Society, 27(4), 529-559.
should avoid, at all costs, the temptation to ignore or hide the causes of excess suffering among the poor” (Farmer 2005:154). Because healthcare providers are intimately connected to the injustices their patients experience through observations of the medical consequences, the role of healthcare providers needs to be to “observe, judge, act” (Farmer 2005:141). This applies both to physicians and to medical researchers in the sense that they need to be aware of the ways in which their practice and/or discourse can unintentionally ignore the fundamental causes of disease.

**Food as a Human Right**

Going beyond the need to *repoliticize* hunger, we need a multilayered approach to tackling hunger and malnutrition, starting with the overarching framework of food as a universal human right. The Universal Declaration of Human Rights created after World War II highlighted the importance of health (including access to food) as a human right (UDHR Article 25). Specifically, the International Covenant on Economic, Social and Cultural Rights (ICESCR) Article 11 (1976) states the fundamental right of everyone to be free from hunger and lists measures to eliminate hunger. More recently, the Millennium Development Goals have adopted this framework of human rights. As discussed in the introduction, the first MDG includes the objective to reduce hunger by half by 2015. The rhetoric of this MDG reframes hunger in the language of human rights and it also brings back the language of hunger (rather than malnutrition). We can see this as an example of change in the discursive practices in which hunger resides from one that is based on modernity and science to one based on human rights. However, there has not been a revolutionary change in the approaches taken to reduce hunger.

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Arguably the fact that hunger has not decreased to anywhere near the MDG targets by the year 2012, reflects this lack of change in the means with which we approach the reduction of hunger.

Using the framework of human rights, Dr. Paul Farmer and his organization, Partners for Health, operates on the idea (drawing on liberation theology) of creating a “preferential option for the poor” (Farmer 2005). Because the world is set up by those with power and status, the only way to counteract this is through making a preferential option for the poor because “…most often, diseases themselves make a preferential option for the poor (Farmer 2005:140). This preferential option incorporates not just action and discussion on behalf of the poor but active dialogue with the poor. That is, research, action, and political discussion need to remain accountable to the poor. As Campos and Farmer (2003) eloquently say, we “…cannot tackle questions of efficacy without first addressing questions of legitimacy.” Without legitimacy on the part of the experts, there exists a division in the priorities set by researchers and those that they study.

“Preferential Science and Research for the Poor”

This thesis has problematized the reliance on experts in scientific research, as well as the divergence between research agendas on malnutrition and the priorities of the hungry. However, research is important and that I am in no way advocating for reducing research on issues of the poor, rather I argue for challenging how we approach research on hunger. Building off of Farmer’s framework of making a preferential option for the poor with regard to health care providers, I argue for applying this challenge to the wider medical (and scientific) community, especially biomedical researchers. We need a preferential option for the poor in research agendas on hunger. That is, research should target the issues of malnutrition that are relevant to those who
are hungry and allow the hungry and the poor a voice in how these agendas are set. This is a challenge because it differs significantly from the current status of research and challenges the very basics of professionalization and, one could argue, the existing “preferential option for the expert” in science.

In terms of setting up research agendas that directly communicate with, and focus on the impact on the hungry and the poor themselves, I want to emphasize accountability. The key to making research legitimate and action efficacious is in remaining accountable to the hungry, that is to the subjects of research and the people who are served. Because hunger and malnutrition are obviously and critically political and economic problems at their most basic, research agendas cannot remain apolitical in their questions and discussions. We generally don’t think of researchers needing to be accountable to their subjects in the same way as NGO actors and politicians, however, I think this concept needs to be emphasized in the framework of hunger research because being ostensibly apolitical is in essence making a political decision to reconfirm and perpetuate the status quo.

Throughout this thesis I have also highlighted the problematic nature of relying on technical fixes to solve the complex issues of health. But this is not to dismiss the usefulness of science and technology. Indeed, our world has seen the reduction of much suffering due to the advance of technologies, and technological innovation is a key tool for reducing disease and poverty in the future. Technology needs to be used within the framework of political decision-making, rational discussion, and concern for human rights rather than as a solution in and of itself. For example, Partners in Health specifically and passionately advocates for advanced technology in the global south. However, they argue for this technology within the overarching vision of human rights and making a preferential option for the poor. Indeed, people from low-
income nations have as much of a right to life-saving and promoting technology as people from rich-world nations; as Campos and Farmer (2004) argue, “lack of access to the fruits of modern medicine and the science that informs it is an important and neglected topic within bioethics and medical ethics.”

There needs to be promotion of science-based action within the human rights framework because science and technology are tools not solutions and means to an end. And the fight to end hunger will require a multifaceted approach within the framework of human rights which incorporates communication with and accountability to the poor; hunger cannot be relegated to the exclusive realm of science and medicine. There are obstacles to the call for political responsibility and international dialogue, as well as for scientific research on hunger that remains accountable to the hungry; however it is truly the only direction we can take if we believe freedom from hunger to be a human right.


