

“WHO KNOWS TOMORROW?”: FOOD INSECURITY, DISTRESS, AND  
MANAGING THE FUTURE IN UPPER WEST GHANA

by

JESSICA R. HAM

(Under the Direction of Bram Tucker)

ABSTRACT

This dissertation situates food insecurity as a phenomenon that complexly intersects with quotidian economic and emotional life in semi-arid Ghana. The semi-arid region of northern Ghana is uniformly identified as “food insecure” by institutions such as the World Food Program, but there is a lack of substantive empirical inquiry into the causes and the embodied experience of food insecurity. I therefore employ a mixed methods ethnographic approach to investigate the distress that emerges as households negotiate linked environmental and economic constraints in two neighboring subsistence-oriented agricultural communities. I question how food, as a fundamental bio-cultural need and a product made accessible through diverse economic processes, intersects with a nexus of immediate and long-term household level goals. This leads to an examination of how achieving or not achieving these goals affects people’s mental health.

I begin analysis by considering food insecurity as a relational experience rather than just a condition, focusing in particular on ways to assess how people relate to the foods that compose daily dietary practice. I then explore how food and other immediate household needs intersect with more long-term household goals, particularly the costs

associated with education. I conclude by assessing how food insecurity may be considered a trigger for poor mental health outcomes in this context. I conduct gendered analysis of the household economy to identify particular pathways that contribute to a burden of gendered distress.

Ultimately, this research shows that while meeting food needs is important for both social prestige and health, long-term household viability is often prioritized over a diverse and satisfying diet. This demonstrates that health outcomes associated with food insecurity should be considered in terms of the global and local political economies and ecologies that structure daily life and decision-making. This consideration structures an understanding of the ultimate causes of food insecurity as well identifies the particular pathways by which generalized distress can be explained.

INDEX WORDS: Ghana; food insecurity; mental health; political ecology of the body; West African diet; resilience; rural livelihoods; education; agricultural development discourse

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## DEDICATION

This is for my paternal grandparents (Ray and Adah Ham) and maternal grandparents (Ernest George and Mary Jane Sunkel). They all delivered early and unwavering belief in my ability to be a successful and productive human being.

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The informal bibliography of this dissertation includes many people and one unique place. I begin with the place. I first traveled to Ghana as an undergraduate in 2002 on a study abroad program. The decision to study in Ghana was what I've come to refer to as a spastic epiphany. True to the form of an epiphany, these initial four months in Ghana were deeply eye opening and ceaselessly fascinating. I knew I would return. I thank this place for taking me in and engaging my curiosity.

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## TABLE OF CONTENTS

|   | Page |
|---|------|
| ACKNOWLEDGEMENTS .....  | v    |
| LIST OF TABLES .....  | x    |
| LIST OF FIGURES.....  | xi   |
| <br>CHAPTER   |      |
| 1 INTRODUCTION TO THE RESEARCH.....   | 1    |
| Research Design and Significance .....  | 3    |
| Theoretical Relevance and Orientation .....   | 7    |
| Overview of Methodology and Fieldwork.....  | 9    |
| Limitations of Research .....   | 19   |
| 2 REVIEW OF THE LITERATURE.....   | 22   |
| Food Insecurity as a Condition of Adaptive Management.....  | 24   |
| Food Insecurity as an Experience of Subjective Suffering .....                                      | 36   |
| Conclusion.....   | 46   |
| 3 THE POLITICAL ECONOMY AND ECOLOGY OF FOOD INSECURITY<br>IN NORTHERN GHANA .....                   | 49   |
| “Ghana is Hot”: The Contemporary Ghanaian Political Economy.....                                    | 49   |
| Colonial and Post-Colonial Foundations of Regional Food Insecurity.....                             | 54   |
| Conceptual Evolution of Food Insecurity and Food Insecurity Intervention<br>in Northern Ghana ..... | 59   |

|   |   |     |
|---|---|-----|
| 4 | ETHNOGRAPHIC CONTEXT .....  | 74  |
|   | Economic Organization in Upper West Ghana .....   | 74  |
|   | Urbanizing Processes .....  | 77  |
|   | Social Organization and Household Economy.....  | 80  |
|   | Field sites.....  | 83  |
|   | Agricultural Context .....  | 90  |
|   | Dietary Practice .....  | 94  |
|   | Conclusion.....   | 99  |
| 5 | “EVERY DAY IT’S <i>TUO ZAFI</i> ”: DETAILING CONDITIONAL AND<br>EXPERIENTIAL FOOD INSECURITY IN UPPER WEST GHANA..... | 101 |
|   | Introduction .....  | 103 |
|   | Anthropological Approaches to Food Insecurity .....   | 106 |
|   | Subsistence, Diet, and Nutrition in Upper West Ghana.....   | 109 |
|   | Methods.....  | 111 |
|   | Results .....   | 114 |
|   | Discussion .....  | 123 |
|   | Conclusion.....   | 128 |
| 6 | “TOO MANY WORRIES”: COPING WITH FOOD INSECURITY IN<br>UPPER WEST GHANA .....  | 131 |
|   | Introduction .....  | 133 |
|   | Processes of Decision Making Under Conditions of Vulnerability.....   | 134 |
|   | Rural Livelihoods and Food Insecurity in Upper West Ghana .....   | 136 |
|   | Methods.....  | 138 |

|   |     |
|---|-----|
| Results .....   | 142 |
| Discussion .....  | 149 |
| Conclusion.....   | 155 |
| 7 THE FOOD INSECURITY AND MENTAL HEALTH RELATIONSHIP:<br>HOW DISCREPANCIES IN GENDERED ECONOMIC NORMS<br>CONTRIBUTES TO DISTRESS IN UPPER WEST GHANA..... | 157 |
| Introduction .....  | 159 |
| Mental Health, Food Insecurity, and the Gender Gap.....   | 162 |
| Gendered Economic Activities in the Research Setting.....   | 165 |
| Methods .....   | 167 |
| Results .....   | 170 |
| Discussion .....  | 177 |
| Conclusion.....   | 182 |
| 8 CONCLUSION .....  | 185 |
| Review of Significant Findings.....   | 185 |
| Contributions to Theory and Drawing Connections to Practice .....   | 189 |
| Future Directions.....  | 196 |
| REFERENCES.....   | 199 |
| APPENDICES  |     |
| A Household Food Insecurity Survey .....  | 226 |
| B Mental Health Survey .....  | 227 |
| C Economic Activity Survey .....  | 228 |
| D Exhaustive List of Items/Activities for Categorizing into SES.....  | 231 |

## LIST OF TABLES

|  | Page |
|--|------|
| Table 1.1: Sample Categorized by Household Types .....                               | 14   |
| Table 1.2: Median Household Population Characteristics .....                         | 15   |
| Table 1.3: Primary Field Season: Seasonal Surveying in Dry Season .....              | 18   |
| Table 1.4: Primary Field Season: Seasonal Surveying in Rainy Season .....            | 18   |
| Table 5.1: Summary Statistics for Agricultural and Formal Economic .....             | 114  |
| Table 5.2: Summary Statistics Food Insecurity, Body Fat, BMI .....                   | 116  |
| Table 5.3: Odds Ratios for Meals Consumed by Recall Iteration.....                   | 117  |
| Table 5.4: Flour Preference Survey.....  | 122  |
| Table 5.5: Frequency of Consumption of TZ by Flour and (Odds Ratio Analysis) .....   | 122  |
| Table 6.1: Frequency of Reported Worries (by Gender), Severity, and Risk Index ..... | 143  |
| Table 6.2: Frequency of Reported Worries, Severity, and Risk Index .....             | 144  |
| Table 6.3: Frequency of Reported Factors of Happiness .....                          | 146  |
| Table 6.4: Socio-Economic Sorting Frequency .....                                    | 148  |
| Table 6.5 Ladder of Life Ranked on Scale of 10 .....                                 | 149  |
| Table 7.1: Median Food Insecurity and Distress Scores, OLS Regression.....           | 171  |
| Table 7.2: Summary Statistics for Time Variant Economic Activities (By Gender).....  | 172  |
| Table 7.3: Summary Statistics for Time Invariant Economic Indicators .....           | 173  |
| Table 7.4: Abbreviated Random Effects Models (With Food Insecurity) .....            | 175  |
| Table 7.5: Abbreviated Random Effects Models .....                                   | 175  |

## LIST OF FIGURES

|  | Page |
|--|------|
| Figure 1.1: Photo of <i>Daily Graphic</i> Headline .....                               | 6    |
| Figure 1.2: Photo of loan advertisement in Wa.....                                     | 6    |
| Figure 3.1: Photo of graffiti expressing economic hardship in Chansa .....             | 49   |
| Figure 3.2: (Map) Ecological zones of West Africa .....                                | 55   |
| Figure 4.1: (Map) Ghana situated in Africa .....                                       | 74   |
| Figure 4.2: (Map) of Ghana and Upper West Region in West Africa .....                  | 76   |
| Figure 4.3: Photo of traditional practice of home décor for spiritual protection ..... | 80   |
| Figure 4.4: Photo of traditional mud brick home .....                                  | 85   |
| Figure 4.5: Photo of concrete block home .....   | 85   |
| Figure 4.6: Photo of shea fruit before processing .....                                | 91   |
| Figure 4.7: Photo of charcoal for sale .....   | 91   |
| Figure 4.8: Photo of bag of chemical fertilizer .....                                  | 93   |
| Figure 4.9: Photo of prepared <i>tuo zafi</i> .....                                    | 95   |
| Figure 4.10: Photo of <i>tuo zafi</i> in preparation .....                             | 95   |
| Figure 4.11: Photo of <i>dawa dawa</i> .....   | 96   |
| Figure 4.12: Photo of <i>saalong</i> .....   | 96   |
| Figure 4.13: Photo of Bambara beans .....  | 98   |
| Figure 4.14: Photo of <i>omondao</i> cowpea variety .....                              | 98   |
| Figure 4.15: Photo of sorghum and millet .....   | 98   |

|   |     |
|---|-----|
| Figure 4.16: Photo of <i>pito</i> .....                                   | 98  |
| Figure 5.1: Results from Seasonal 24-Hour Dietary Recalls, Chansa .....   | 118 |
| Figure 5.2: Results from Seasonal 24-Hour Dietary Recalls, Tampiani ..... | 118 |
| Figure 6.1: Risk Map for Tampiani 2012.....                               | 145 |

# CHAPTER 1

## INTRODUCTION TO THE RESEARCH

All we want is a little  
Piece of bread and mind  
You just take the rest  
Just take the rest (take am)  
Just take the rest (take am)  
Just keep the rest (take am, cool, ah)  
**Wanlov the Kubolor, *Human Being***

Now you don't talk so loud  
Now you don't seem so proud  
About having to be scrounging for your next meal  
**Bob Dylan, *Like a Rolling Stone***

Papa is a worried man.  
There is no way that I can see,  
That I can feed my family (That's sad)  
I don't own a money tree:  
An' I don't own no land  
**Johnny Cash, *Worried Man***

If we are what we eat, as the adage proclaims, it seems we should also be what we do not eat. This dissertation examines the process of being what we do not eat; it examines how it feels to be food insecure as well as what structures food insecurity as both a condition and experience. As the song lyrics in this epigraph denote, the feelings that associate with such a condition are complex and relate to the political and economic processes that cause it. Wanlov's lyrics evoke reserved anger at the acceptance of hunger

as a situation of powerlessness. Dylan's speak to the shame of hunger. Johnny Cash presents an image of anxiety over the inability to feed one's family through either purchasing or producing food. Collectively, these lyrics define how the denial of food is the ultimate exclusion (Madeley 2001).

This dissertation contributes to a central cause of twenty-first century anthropology, that of navigating the connections and disconnections between the local and the global and between the body and culture to make a case for the embodied effects of inequality. Increasingly, medical and bio-cultural anthropologists are exploring how and detailing the ways in which food insecurity results in poor mental health outcomes. Such inquiries are well suited for anthropology because while the biological need for food might be universal, culture complicates how food fulfills social and symbolic needs and shapes how food is perceived to meet that biological need. As such, as a condition that occurs in diverse contexts that can result in diverse affective responses, food insecurity merits further anthropological investigation (Hadley and Crooks 2012; Wutich and Brewis 2014). This dissertation research contributes to the quest to understand the etiology of distress in food insecure populations by focusing on semi-arid Ghana, where food insecurity is complexly constructed in webs of dynamic political economies and ecologies.

In this introductory chapter I touch upon the theoretical and practical relevance of this research, provide an overview of the research design and methodology, and conclude with a discussion of the limitations of the research. In Chapter 2 I review how anthropology, and related disciplines, approach food insecurity as a condition of management and as a subjective experience in order to contextualize the questions that



guide this research. Chapter 3 situates contemporary food insecurity in northern Ghana within colonial and post-colonial history. It further assesses how such regional inequalities now make the northern regions vulnerable to neoliberal agricultural development discourse that continues to de-contextualize the causes of food insecurity. Chapter 4 is an ethnographic oriented chapter that details the empirical context from both a regional perspective of geography and socio-economic structure as well as in-depth introduction to the livelihoods and dietary practices of the two villages that served as sites for data collection. Chapters 5, 6, and 7 address the successive research questions. Chapter 5 details a comparative analysis of the experience of food insecurity in the two field sites. Chapter 6 begins by questioning whether food insecurity is considered a worrying situation in this context and subsequently situates food insecurity as one of the more pressing worries faced by the population. Chapter 7 then considers how, as a worry, food insecurity can be understood to result in particular distressing symptoms. Chapter 8 provides a synthesis of major research findings, identifies contributions to theory and practice, and suggests future research initiatives that build from this project.

### **Research Design and Significance**

Ghana is heralded as a country with improved rates of food and nutritional security, making it one of the few beacons of hope for food security in Africa. The 2015 Global Hunger Index<sup>1</sup> shows that between 1990 and 2015 Ghana consistently lowered rates of hunger, with its current global ranking putting it just ahead of Bolivia and just behind Vietnam (von Grebmer et al. 2015). However, regional economic inequalities in

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<sup>1</sup>This index is calculated yearly and based on four components of hunger as designated by: the FAO (undernourishment), UNICEF/WHO/World Bank (child wasting, child stunting) and IGME (child mortality); undernourishment, wasting and stunting, and child mortality are equally weighted.

Ghana remain quite steady (Abdulai and Hulme 2015; Yaro 2013). Food insecurity is one of the most salient ways to expose such inequalities.

The Upper West Region of Ghana is identified by the World Food Program as food insecure (Biederlack and Rivers 2009; Hjelm and Dasori 2012). However, there is a lack of substantive empirical inquiry into causality or the embodied experience of food insecurity. I therefore employ a mixed-methods, ethnographically grounded approach to investigate negative affective outcomes that emerge as households negotiate the environmental and economic constraints that encompass food insecurity. The study is centered in two neighboring villages in the Upper West located on the perimeter of an expanding urban center. In this pursuit, I am guided by three successive questions:

***How does ability or inability to access preferred foods/diet result in food in/security?***

This inquiry makes use of a political ecology perspective to understand food access. I begin by considering food insecurity as both a condition of food management as well as an experience of relating to food and diet. I assess how people relate to the foods that compose daily dietary practice and why those foods are the cornerstones of dietary practice. I evaluate this in comparison to desired daily dietary practice.

***How do food needs, and worries over food needs, intersect with a nexus of other immediate household needs and long-term household level goals?***

I then explore if food insecurity is an experience that people worry about in this context. I look particularly at how food needs intersect with other household goals. With this question I seek to demonstrate how food is but one need that households must fulfill and that it not only competes with other factors of maintenance, such as healthcare and agricultural inputs, but also with factors that are envisioned to buffer the household from

future volatility. In this way I demonstrate households envision and enact their resilience to ecological and economic instability.

***In turn, how does food insecurity affect people's sense of mental well-being?***

I conclude by assessing how food insecurity, as measured in standardized fashion, may then be considered a trigger for poor mental health outcomes. I look at how an incongruence in the construction and enactment of gendered roles in the household food economy contributes to a burden of gendered distress.

This is both timely and thematically important research. Approximately 14% of the global disease burden can be attributed to common mental disorders such as anxiety and depression and the WHO anticipates that such illnesses will be the most pressing global health burden by 2020 (Prince et al. 2007). While there is a growing base of scholarship focused on how to diagnose and treat severe psychiatric disorders in under-resourced countries so as to avoid the social and physical maltreatment of the mentally ill (see Read et al. 2009), there is relatively little research on how populations in such contexts deal with the more prevalent occurrence of affective illnesses similar to anxiety or depression or how such conditions are contextually experienced.

The research that does exist in Ghana indicates that worry, what causes worry, and how to resolve worry feature prominently in Ghanaian life. Men and women express negative affect in relation to coping with social and economic norms and needs (Adinkrah 2012; Avortri and Walters 1999, 2001). Worry also prevails in public discourse. In a 2012 letter to the editor of the daily national newspaper *The Daily Graphic*, a writer concerned about the biomedical capacity to diagnose and treat psychologically oriented illness wonders how the “worried well” in Ghana will be cared

for (Figure 1.1). In the West African highlife tradition of social activism through music, “*Oyo Asem*,” a song released in 2015 by Pat Thomas encourages people to be open and talk about their worries (Eyre 2015). Advertisements for companies managing private loans are prolifically posted throughout Ghana and appeal to the public through the promise of a healthy mind (and body) (Figure 1.2).



**Figure 1.1: Photo of *Daily Graphic* Headline**



**Figure 1.2: Photo of loan advertisement in Wa**

The potential to feel less worried about meeting food needs does not seem to be attenuating, either. Though global food prices in 2015 were the lowest they have been since the 2008 food crisis, food prices have not leveled to pre-2008 rates. The Food and Agricultural Organization expects that grain prices will remain 15-40% higher in real

terms than the average price between 1997-2006. The International Panel on Climate Change anticipates that the number of people affected by undernourishment will rise between 40 and 170 million (cited in McMichael and Schneider 2011: 119). As food prices remain high it is likely that food accessibility will remain an issue for populations in diverse economic contexts and that these barriers are likely to be a source of worry. Given these trends, it is vital to have empirical evidence that elevates food insecurity as not just as a condition that maps onto rates of malnourishment, but as an experience that is deeply felt and is an embodiment of inequality. Such research can help inform policies that can improve equitable access to locally preferred foods as well as public health agendas that can begin to integrate an appreciation of the importance of affect to health and well-being.

### **Theoretical Relevance and Orientation**

This research looks at food insecurity holistically, as a particular kind of condition tied to socio-ecological and socio-economic systems and as resulting in health outcomes that extend beyond nutrition. Though speaking to concerns and relationships that today are quite interdisciplinary, this focus is a product of classic anthropological interests. With extensive and long-running anthropological engagement related to food scarcity and human health, this study takes particular guidance from, and contributes to, economic and bio-cultural anthropological approaches to human adaptive capacity. Economic and ecological anthropologists have long been invested in understanding how human populations elevate social and cultural structures to meet their subsistence needs in different ecological contexts. Biological anthropologists, in turn, uncover how features of

human biology serve to assist, or are affected by, adaptations to different ecological contexts.

Since the earlier days of anthropology, bio-cultural and medical anthropology have emerged as sub-disciplines that demonstrate how social, political, and economic structures of various scales intersect with processes of health. Since the early 1990s there have been ongoing dialogues about how to ensure that bio-cultural anthropology engages culture as carefully as it does biology. Largely, this conversation has centered around the need to address the environment as a setting that influences and is influenced by the political economy, so as to understand the structural determinants of health (see Goodman and Leatherman 1998; McElroy 1990; Singer 1993; Wiley 1992). Increasingly, the focus for both sub-disciplines is to show how and why inequities in health outcomes exist within and between populations (Lende 2012; Pfeiffer and Nichter 2008; Worthman and Kohrt 2005).

In a 2005 article about how to continue to bridge biological and cultural anthropology into a bio-cultural model, Daniel Hruschka and colleagues focus on the role of psychological anthropology. Citing a need for bio-cultural anthropology to integrate theoretical paradigms and employ careful attention to methodology, they make the case that the force of the political economy occurs through an interpretation or perception of a culturally constructed mind (Hruschka et al. 2005). This employment of the culturally constructed mind led to increased scholarship looking at how psycho-social distress results from living in different vulnerable situations, with further interest in connecting biological outcomes to conditions of vulnerability. Resource insecurity, and food in particular, has been a recent focal point (Weaver and Hadley 2009; Wutich and Brewis

2014). Food insecurity studies have done well to establish that there is a strong and positive correlation between food insecurity and symptoms associated with anxiety and depression (Cole and Tembo 2011; Hadley and Patil 2006, 2008).

However, because food is a profoundly complicated component of the human bio-cultural experience, speaking to biological, cultural, social, and symbolic needs, it is challenging to understand why, when it becomes inaccessible, humans can feel distressed. As such, food insecurity presents the need for another turn in theoretical drive. This research therefore further draws from and helps to build inter-disciplinary work on subjectivity, with specific attention to how bodies serve as loci of human-environmental interactions and especially in relation to the ongoing development of a political ecology of health (Jackson and Neely 2015; King 2010). By bridging traditional political economic research perspectives that establish how structures influence food insecurity, a turn to a political ecology perspective of health can help establish how people relate to their food insecurity. This will draw attention to the affective experience of food insecurity and the connections between this affective experience and the circumstances that cause it.

### **Overview of Methodology and Fieldwork**

To address the experience of food insecurity, this study occurs in two rural villages (Chansa and Tampiani) located on the very western edge of the Wa Municipal district in the Upper West Region of Ghana. I detail these field sites in Chapter 4. I employed mixed methods to examine patterns of food insecurity, dietary practice, livelihood activity, and health outcomes seasonally. While the data employed to address the research questions comes primarily from a field season conducted in Tampiani and

Chansa between January 2014 and January 2015, my understanding of the socio-economic context of food insecurity in Ghana is situated over the course of 23 months between 2011 and 2015.

Between May and June 2011 I conducted exploratory research in Accra and the Northern Region. In addition to meeting with government officials, NGO workers, and farm extension workers, I was afforded the opportunity to conduct focus groups with farmers in the Northern Region about the opportunities and constraints of farming as well as to field test a modified version of the Household Food Insecurity Access Scale (HFIAS). Testing of this survey instrument provided evidence of food insecurity as widely and variably experienced issue as well as perceptions of causality and coping mechanisms employed.

Upon arrival in the Upper West in July 2011 I introduced myself to a local NGO called ProNet and interactions with ProNet staff proved quite fruitful. Field staff took me on trips to visit communities they worked with and were forthcoming in providing their perspectives on what made day-to-day life challenging for rural people in the Upper West. Furthermore, discussions with Martin Dery, the director of ProNet were engaging and informative. As a native of the Upper West he is very knowledgeable about the region's opportunities and constraints and he greatly facilitated my own understanding of local economic and ecological circumstances. As the leader of a small, locally developed and managed NGO, one often partnering with larger international funding agencies, he also possesses understanding of how the Upper West is situated within both state and international development plans. Rapport with ProNet led to their introducing me to



Tampiani, one of their service communities<sup>2</sup>. These initial visits to Tampiani provided rich opportunities for observational analysis of domestic life, visits to fields with farmers, and the opportunity to continue field-testing the HFIAS.

In June 2012 I returned to Tampiani to seek permission to engage in long-term fieldwork in 2013. For six weeks I lived in Wa and commuted to Tampiani with Wahid Yahaya, a ProNet field worker who served as my assistant and translator. Wahid helped facilitate my interactions with traditional authorities to discuss my research goals and my interest in working in Tampiani. The chief's permission was granted orally and symbolically in the gifting of a rooster. Once we secured the support of the chief, we re-introduced ourselves to the residents of Tampiani and further sought their permission for my immediate and long-term research efforts.

Several methods that are reported on in Chapter 6 were conducted in this preliminary 2012 season. With Wahid's assistance, we conducted a risk and happiness mapping exercise in Tampiani to understand how local risks are perceived to cause worry. We also implemented a method called the ladder of life that measures perceptions of socio-economic change. Another methodological focus of this field season was testing a mental health survey instrument, which led to extensive semi-structured interviews on a local stress-bound illness known as worry sickness.

I returned to Ghana in June 2013. Between June and November 2013 I was based in Accra, an encampment that enabled me to finalize survey protocols as well as conduct what I refer to as broad-spectrum ethnography. I used this time to familiarize myself with how the discourse on poverty alleviation in Ghana was orchestrated and implemented.

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<sup>2</sup>Though part of ProNet's service community, neither Tampiani nor Chansa was part of any current program or project with either ProNet or any other NGOs during the research period.

Given my research interests, I was particularly invested in how agricultural development is elevated as the solution to food insecurity. I draw on these qualitative experiences in Chapter 3 in an analysis of how past and present processes of the political economy influence how hunger in northern Ghana is both constructed and reacted to by external actors.

By November 2013 I traveled to the Upper West to begin systematic data collection. Upon arrival I began discussions with ProNet staff to help facilitate the recruitment of another community to serve as an additional field site. This was a decision born out of multiple concerns. One, I was hopeful to have a sample size of 150 adult men and women and Tampiani's population was not robust enough. Secondly, having learned about the urbanization of this area<sup>3</sup>, I was eager to find a field site more integrated into that process so as to facilitate a comparative perspective.

With ProNet's assistance, I gained permission from local authorities to both live and conduct research in Chansa and to make Tampiani a satellite site that I would travel back and forth to. In January 2014 I moved into one of two rooms in a small, mud-brick home owned by James Yusef, the man whose family became my caretakers. Over the course of my year in Chansa, I regularly spent my evenings with the Yusef family, cooking and eating with them in the courtyard of their large compound that I was neighbor to. This open invitation into the intimacies of the Yusef domestic sphere provided some of the richest ethnographic experiences as well as the most personally meaningful engagement.

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<sup>3</sup>I am indebted to Wahid Yahaya for helping me to understand the social and economic aspects of Wa's increasing urbanization.

Life in Chansa enabled me to participate in both big events such as weddings and the Islamic celebrations of Eid al-Fitr and Eid al-Adha, but also allowed me to understand daily rhythms and seasonal patterns. For example, living next to one of the boreholes provided knowledge about women's time and labor burden, but also clued me in to how the borehole served as a prime social space for women. Observations and experiences such as these added nuance to my understanding of local socio-economic practice in a manner that would not have been available without this ethnographic integration.

In January 2014 I began systematic data collection. All research activities between 2014 and 2015 were conducted with three local assistants who invaluablely helped with all aspects of project implementation and translation. Abdulai Salifu served as my main assistant throughout the duration of the main field season. Abdulai is Wale and a native speaker of both the Wale and Dagaare dialects and obtained a BA in development studies. Between February and April 2014 I worked with Joe Arah, a Dagaati who was also a native speaker of both the Wale and Dagaare dialects. Beginning in June 2014 I recruited Lizzie Salifu, Abdulai's wife, and she continued to work with me through the end of the project. Lizzie had completed her secondary schooling and was pursuing a tertiary degree at a local business college. Though not native to the Upper West, she was fluent in Wale because of ongoing residency in the region.

Before any systematic data collection began, both communities were sampled in order to achieve a total sample size of 148 individuals. In Chansa, random sampling occurred. An already existing community census was used to denote the four sections of the community as well as the population of those respective sections. Households were then randomly sampled from those four sections to ensure that no one section was

oversampled. Tampiani has a much smaller population and the sampling procedure was therefore nearly exhaustive. Eight-four individuals (42 men and 42 women) were randomly recruited from Chansa. Sixty-four individuals (30 men and 34 women) were recruited from Tampiani. This results in a total sample size of 148 individuals (72 men and 76 women).

**Table 1.1: Sample Categorized by Household Types  
(Marriage and Residential Pattern)**

|  | <b>Chansa<br/>Total #</b> | <b>Tampiani<br/>Total #</b> |
|--|---------------------------|-----------------------------|
| <b>Household Type by Marriage</b>            |                           |                             |
| Monogamous                                   | 21                        | 24                          |
| Polygamous households                        | 20                        | 3                           |
| Male single headed                           | 2                         | 1                           |
| Female single headed                         | 0                         | 8                           |
| <b>Household Type by Residential Pattern</b> |                           |                             |
| Nuclear family compound                      | 20                        | 19                          |
| Extended family compound                     | 22                        | 13                          |

Of these 148 individuals, there are 79 household units (43 Chansa, 36 Tampiani). In this context, household refers to an economically independent unit. Patterns of marriage in these field sites can be classified as monogamous, polygynous, or non-married (widowed or single). Regardless of marital practice, households can be organized in residential units that are physically distinct from other households (neolocal) or they can be nuclear households that are economically independent from other households, but sharing the same compound housing (Table 1.1). Such nuclear households living in extended family compounds maintain separate farms, but could be involved in informal sharing of labor and resources. In order to capture diversity in household structure, we

also collected data on the number of people living in the household (Table 1.2). Because families here often incorporate extended kin into their households, to ascertain an idea of household population, we focused not on families of procreation, but instead on the number of adults and children feeding in the household as well as the breakdown of children enrolled in school.

**Table 1.2: Median Household Population Characteristics**

| <b>Household characteristics</b> | <b>Chansa</b><br>Median<br>(25 <sup>th</sup> , 75 <sup>th</sup> percentile) | <b>Tampiani</b><br>Median<br>(25 <sup>th</sup> , 75 <sup>th</sup> percentile) |
|----------------------------------|---|---|
| # Adults                         | 3 (2, 3)  | 3 (2, 5)  |
| # Children                       | 4 (3, 5)  | 4 (3, 5)  |
| # In primary school              | 3 (2, 4)  | 4 (3, 5)  |
| # In secondary school            | 0 (0, 1)  | 0 (0, 1)  |

I employed mixed methods to address the research questions. I used qualitative methods to both structure quantitative methodology as well as guide interpretation of quantitative results. During fieldwork, my approach to qualitative methodology was intentionally un-structured, an ethnographic agenda that upholds what Emily Yates-Doerr describes as confidence in and aptitude for curiosity that engages with what is unknown (Yates-Doerr 2015: 241). This approach was fundamental to shifting the direction of this research from a focus on the effects of distress in food insecure populations, to more nuanced attention to why food insecurity can be distressing as well as how that particular distress intersects with other distressing factors of life.

In preliminary seasons, qualitative methods such as observation and interview were extensively employed to gain comprehension of livelihoods, perceptions of climate

change, dietary structure, and expressions of worry. Between 2014 and 2015 I integrated semi-structured interviews, focus groups, and participant observation as time allowed. With these methods I focused particularly on learning more about dietary change, gendered economic roles, food preparation practices, constraints to agricultural production, and experiences with a local illness known as worry sickness.

The quantitative methods used to address the research questions are detailed extensively in Chapters 5, 6, and 7. Here I return to the research questions and provide a brief overview of the quantitative methods employed to address them.

***Q1: How does ability or inability to access preferred foods/diet result in food in/security?***

Based on field-testing in 2011, an eight-question food insecurity survey (HFIAS) was implemented three times over the course of the year (March 2014, July 2014, October 2014). This is a recall-based survey inquiring about food access and utilization in the month prior. Responses are categorized by the number of times people experienced a particular scenario. Anthropometric measurements were recorded seasonally in May, July, and January to reflect seasonal (pre and post-harvest) changes in body mass. Height was recorded to the nearest centimeter using a Seca 213 portable stadiometer in the first iteration. Body mass was measured with a Tanita digital scale. To look at seasonal dietary diversity, over the course of 12 months my team and I conducted seven seasonal dietary recall surveys. Based on observations and interviews about dietary satisfaction, a one time survey on food preference was developed and implemented.

***Q2: How do food needs, and worries over food needs, intersect with a nexus of other immediate household needs and long-term household level goals?***

As mentioned in the description of the 2012 field season, three methods that address this question were employed at that time. During the primary field season (September 2014) a listing and ranking exercise was conducted to ascertain how people perceive of socio-economic mobility.

***Q3: In turn, how does food insecurity affect people's sense of mental well-being?***

The same food insecurity survey results are used to address this question. Additionally, checklist of 14 symptoms of distress implemented at the same time as the food insecurity survey is used. Like the food insecurity instrument, this is a recall based survey inquiring about presence of a symptom and the number of times that symptom was experienced in the month prior. Recall data on participation in particular socio-economic activities (farming, buying food, earning money and paying school fees) also addresses this question. Symptoms reflected in this instrument are based on interviews about the local stress bound illness known as worry sickness.

Since many of the methods employed are recall based surveys that occurred seasonally, I outline the timeline for this systematic data collection in Table 1.3 (dry season) and Table 1.4 (rainy season). All survey instruments were translated from English into Wale by Abdulai and then translated back into English by another native Wale speaker into English to ensure linguistic integrity and consistency. Surveys were conducted orally with the full sample and paper records were kept (see appendices).

In addition to the methods described above, I collected seasonal measurements on blood pressure and cortisol (as collected through hair). These methods are not reported on in the dissertation, but were implemented to gather data that could contribute to telling a story about the embodied effects of food insecurity. During the agricultural season we

collected 16 weeks of data on weekly allocation of labor to farms. This data is not extensively drawn upon in the dissertation, but was collected in order to see how the effects of distress might influence productive capability.

**Table 1.3: Primary Field Season: Seasonal Surveying in Dry Seasons**

| Variable Measured                     | Jan. 2014 | Feb. | March                | April                | Nov. | Dec.                                   | Jan. 2015            |
|---------------------------------------|-----------|------|----------------------|----------------------|------|--|----------------------|
| Food Insecurity ( <i>Q1 and Q3</i> )  |           |      | 1 <sup>st</sup> time |                      |      |  |                      |
| Distress ( <i>Q3</i> )                |           |      | 1 <sup>st</sup> time |                      |      |  |                      |
| Socio-Economic Activity ( <i>Q3</i> ) |           |      | 1 <sup>st</sup> time |                      |      |  |                      |
| 24 Hour Dietary Recall ( <i>Q1</i> )  |           |      |                      | 1 <sup>st</sup> time |      | 6 <sup>th</sup> , 7 <sup>th</sup> time |                      |
| Anthropometrics ( <i>Q1</i> )         |           |      |                      |                      |      |  | 3 <sup>rd</sup> time |

**Table 1.4 Primary Field Season: Seasonal Surveying in Rainy Season**

| Variable Measured                     | May                  | June                 | July                 | Aug.                 | Sept.                | Oct.                 |
|---------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Food Insecurity ( <i>Q1 and Q3</i> )  |                      |                      | 2 <sup>nd</sup> time |                      |                      | 3 <sup>rd</sup> time |
| Distress ( <i>Q3</i> )                |                      |                      | 2 <sup>nd</sup> time |                      |                      | 3 <sup>rd</sup> time |
| Socio-Economic Activity ( <i>Q3</i> ) |                      |                      | 2 <sup>nd</sup> time |                      |                      | 3 <sup>rd</sup> time |
| 24 Hour Dietary Recall ( <i>Q1</i> )  | 2 <sup>nd</sup> time | 3 <sup>rd</sup> time |                      | 4 <sup>th</sup> time | 5 <sup>th</sup> time |                      |
| Anthropometrics ( <i>Q1</i> )         | 1 <sup>st</sup> time |                      | 2 <sup>nd</sup> time |                      |                      |                      |



## **Limitations of Research**

Empirical research presents many challenges that are difficult to envision during research design or to overcome in situ. Though I think my previous fieldwork experiences in Africa buffered me from logistical setbacks, this research is limited by a number of factors. A primary hurdle and one that persisted throughout fieldwork was language acquisition. My opportunities to formally learn Wale were non-existent prior to fieldwork. While in Accra, I spent time in informal lessons with a native speaker to learn greetings and basic vocabulary of the domestic sphere. However, while in the Upper West, the patience of my already hardworking research assistant Abdulai was stretched too thin to allow for lessons. In turn, my ability to pick up the language through engagement in day-to-day life proved very slow and inefficient. Though I was able to expand my vocabulary to include important economic activities and food, I never reached a point close to mastery. As a result, I am sure that by relying on translations I am missing a lot of the nuance of the information that interlocutors shared with me.

In retrospect, had the time and money been available, I would have designed this project to occur over two years. This would have allowed me to spend the first year engaged strictly in ethnographic integration so that language acquisition would not have to compete with systematic data collection. Such extended research design with an emphasis on traditional ethnography would also have enhanced my rapport with residents of Chansa and Tampiani. While I am confident that I did establish good rapport with both communities (and have a rich memory bank and detailed field notes that can attest to this), I anticipate that had I spent more time with people engaged in their daily activities, I would have lessened the harshness of my position as a researcher with a need to

produce results and enhanced my position as a curious human sidelining as a researcher. I think that a slower and more informal integration into the communities would have buffered the fatigue that I am sure that they felt in being asked to repeatedly participate in surveys and interviews and the fatigue I felt in having to repeatedly ask people to participate. One of my favorite reflections from an interlocutor in Tampiani occurred after the third and final round of food insecurity surveying. When we finished he declared that in having spent time with me, an adult student, he understood why his children had to spend so much time repeating their homework exercises.

The iterative usage of surveys in this research brings forward the possibility that seasonal variation does not reflect seasonal experiences with food or distress, but rather interlocutor familiarity with the survey questions. It is also possible that with my reliance on an assistant to orally implement the surveys and translate responses to me resulted in unintended errors. Furthermore, it is possible that as my assistant became increasingly familiar with my research interests he was able to prompt or guide responses in particular manners he anticipated would garner my interest. Though, given my consistent presence at all sites of interviews, and even with my rudimentary Wale, I suspect I would have picked up on such prompting if it occurred.

Even though I use the results of this research to make claims about food insecurity as a condition and as an experience, it is important to note that these findings provide suggestions for what may be found in other contexts. I am positioned as an anthropologist contributing to the development of a stronger theoretical base for resource insecurity and distress and use empirical data from a particular socio-cultural context with a unique political and economic history and ecology to do so. As such, these results,

while reflective of a particular reality, do not speak to what the conditions and experiences of food insecurity will necessarily be elsewhere in Africa or in any other rural or urban context. Instead, the methodological and analytical approach should be identified as replicable so as to compare and contrast these findings with results from diverse settings. In the following chapter I detail how food insecurity has been approached by a wide berth of social scientists so as to embed my research questions in scholarship of the past 60 years and to highlight how my methodological and analytical approach embraces a holistic anthropological perspective. This review of the literature is intended to underscore how food insecurity is both caused and felt so as to not divorce the condition from the experience and to foster an integrative and replicable approach to identifying food insecurity in diverse settings.

## **CHAPTER 2**

### **REVIEW OF THE LITERATURE**

Because hunger is not a theoretical condition, but an actual experience and a predominant demonstration of inequality in culturally and economically diverse societies of past and present, the ideas and positions that guide research and practice are quite important. Over the past four decades, food insecurity has emerged as a way to operationalize the more amorphous term hunger. Food insecurity is a concept that attempts to describe and measure the ability to engage with a preferred foodway that meets a fundamental need to eat food for reasons of health and biology as well as for satisfaction of cultural and symbolic needs. Contemporarily, there are four components of food security that are widely acknowledged and incorporated into tools for measurement. 1) Food must be available, 2) accessible, 3) utilized efficiently through intake and absorption, and 4) prices/supplies/access must be stable (Naylor 2014: 7).

As is evidenced through these four components, food insecurity is grounded in both cause and effect. Furthermore, it is a concept that speaks to phenomena and issues that cross disciplinary boundaries and as such, the theoretical considerations of what causes food insecurity (see Wutich and Brewis 2014) as well as what results (see Hadley and Crooks 2012) remain debated by diverse circles of scholars. There is a general agreement that food is a biological and cultural need and that both facets should be incorporated into a multi-dimensional definition of food security. However, there is a simultaneous recognition that the methodological tools that are employed to measure

food security still struggle to capture that nuance, leaving empirical evidence telling discrete stories (Carr 2006; Coates 2013; Hendriks 2015; LeRoy et al. 2015; Maxwell 1996).

With this disjuncture in mind, I structure this review of the literature to connect these discrete stories, with a goal of showing how the twentieth century approach can be substantiated by an emerging focus on the cultural and psychological merits of food as a satiating feature of well being. I highlight how economic anthropologists, human geographers, medical anthropologists, bio-cultural anthropologists, and other related disciplinary scholars engage with food insecurity theoretically and methodologically, the empirical evidence they use to build their claims, and how these bodies of scholarship contribute to the debates about what causes food insecurity and the extent of its effects. I address this body of scholarship through two distinct lenses. I identify research that speaks to food insecurity as a condition of adaptive management and research that speaks to food insecurity as an experience of subjective suffering.

First, I look at how food insecurity has been approached as a condition that is adaptively managed. I focus particularly on how populations in subsistence contexts operate within their socio-ecological contexts to manage food availability, access, and utilization. This largely includes biological, economic, and ecological anthropological engagement with bio-cultural adaptive theory. Second, I look at scholarship working to understand food insecurity as an experience that is not just managed, but felt. To do this, I first draw attention to a bio-cultural approach that uses models to isolate particular social or cultural mechanisms that trigger an experience of distress. I then turn to how medical anthropologists and human geographers draw attention to the body to enable a

similar exploration, but through what I identify as a more explicitly subjective engagement with subjectivity.

### **Food Insecurity as a Condition of Adaptive Management**

The need to acquire food is one of the few truly human universals. This need has greatly shaped the human evolutionary path and continues to shape diverse dietary cultures and diverse health outcomes (Armelagos 2010). Investigating why and how different societies use different processes and systems to meet this need, and what results to human health and biology when food needs are not met, are questions nested in the anthropological tradition of exploring bio-cultural diversity (see Harris and Ross 1987). These are questions guiding inquiries into adaptive processes. Regarding the acquisition of food by subsistence societies, engagement with adaptive capacity begins with human relationships with dynamic ecological systems and extends to broader considerations of the interrelationships between humans, environments, economies, political structures, and health across scales of influence and analysis. Through this lens, attaining food security is a response to dynamic processes of change and negotiation in response to multiple global and local drivers (Hadley and Crooks 2012).

In particular, ecological and economic anthropologists investigate adaptation within socio-ecological systems by focusing on actors and the actions that they take through social and cultural means to manage or adjust to perceived risks (Nelson et al. 2007; Smit and Wandel 2006). Such pursuits identify how populations living in uncertain environments mitigate the risk of food shortage through either fostering or taking advantage of existing variability to reduce the risk of failed food systems (Halstead and O'Shea 1989). For example, pastoral populations find it beneficial to keep

different kinds of livestock (Mace 1990) and societies that remain reliant on hunting and gathering find such pursuits to be less risky than engaging in agriculture because of the diverse resource base they have access to as well as the opportunities such resources are afforded in the marketplace (Tucker et al. 2010).

Substantial scholarship has denoted how shifting cultivators manage forest ecologies (Conklin 1961; de Schlippe 1956; Dove 1983; Fairhead and Leech 1995; Geertz 1966). These studies show how ecological variables are dynamic rather than fixed and that such variability influences the management of cultivation and fallow periods (Brush 1975). Ecological management also informs analysis of intensive systems of agriculture (Netting 1968; 1993). Netting (1993) notes that intensification is not a process of technology development and implementation, but rather a process of inputting more time, energy and skill. From his perspective, intensification brings an increased and more detailed need for farmer knowledge of agronomic variables. Variability in climate and soil can be managed through techniques of intercropping and ridging (Richards 1985; Watts 1983). Field scattering (Goland 1993; Marston 2011) and mixed cropping (Richards 1985; Norman 1974) prove to be measures that can prevent total crop failure. Lansing (1991) outlines how the maintenance of water temples facilitates nutrient cycling in rice irrigation systems in Bali. Brush (1977) and Netting (1981) detail how farmers use microclimates of mountain systems to grow diverse crops that can be harvested in alternating times.

While these techniques reduce the risk of failed subsistence, and this plays a substantial role in the enactment of such management tactics, it is important to note that these actions are not only reduced to economic behaviors. Scholarship also addresses

how diversity in production speaks to localized notions of social needs. Guyer (1996) cautions that diversity in agriculture is more than a feature of adaptation, but a product of social and cultural history of relations among farmers that must be analyzed alongside their engagement with risk. Brush (1992) suggests that in the Andes high rates of biodiversity still exist in areas where high yielding seed technologies have been implemented because of preferences for the taste of local varieties as well as the social prestige that such crops bring. In Indonesia, Anna Tsing (2005: 167-168) notes:

The variety of swidden vegetables also can remind us of the inextricability of aesthetics and survival. [The] Meratus grow many kinds of crops because they value variety for its taste, for the sociability it allows, for its sheer exuberance, and because it increases the chances of bountiful harvest. Crop variety guards against crop failure due to pests, climate, or soil conditions. Crop variety invites borrowing and giving of samples, seeds, and cuttings, and it ties farmers to a wide social network, near and far. Crop variety is valued for the beauty it gives the field and as a sign of the prowess of the farmer.

While ecological knowledge and conditions prove important to farming systems, other research attempts to capture the breadth of forces that influence farmer decision-making. Anthropologists working in the cultural ecology tradition identify the timely allocation of labor as a fundamental factor that ensures crop productivity (Lacy et al. 2006; Linares 1997; Netting 1968; Nyerges 1997; Stone et al. 1995). Social relations also play an important role in reducing the risk of food scarcity (Colson 1979). The value of food exchange systems with either extended kin (Cashdan 1985; deGariné and Koppert 1988; Ford 2009; Richards 1939; Ziker and Schnegg 2005) or with different subsistence groups (Casimir 1988; Holtzmann 2009) is prominently documented in the ethnographic canon. Cliggett (2005) details how older women in Zambia, dispossessed of land, must navigate kin networks to access food. Conversely, the breakdown of such social support systems is identified as a cause of hunger in northern Nigeria (Watts 1983).



The transmission of knowledge is another cultural attribute mitigating subsistence risk. Oral traditions demonstrate an important role in establishing group memory for overcoming short-term food shortage. Taboos and rituals guide resource extraction for long-term sustainability (Colson 1979; Minc 1986). In turn, the circumvention of food taboos is found to be a strategy employed by women in the Democratic Republic of Congo to reduce risk of undernutrition (Bentley et al. 1999).

Biological anthropology has worked with similar human ecological models for comprehending feedback relations between human biology and the environment, focusing on the morphological, physiological and behavioral processes that interact in adaptive processes (Thomas 1997). One area of focus has been the relationship between physical activity levels and nutritional standing. Because subsistence economies often exist on a very seasonal schedule, with period of work intensity co-occurring with a period of food shortage, this approach demonstrates how people do or do not biologically adapt to such fluctuation. In populations where there are no signs of seasonal changes in body composition, metabolic adaptation is indicated (Bentley et al. 1999; Stinson 1992). Additionally, reviews on physical activity levels indicate that there is a lot of flexibility within farming to prevent fatigue and save energy (Dufour and Piperata 2008; Panter Brick 2003).

When such buffering mechanisms fail, changes in seasonal nutrition can occur. Huss-Ashmore and Goodman (1988) demonstrate that female farmers in Lesotho experience seasonal variation in body composition, with peak adiposity occurring following the harvest period, when food is readily available and agricultural laboring has stopped. Difference in seasonal adiposity among East African pastoralists that re-occur

during dry periods influence women and children in negative ways (Sellen 2000). In the Andes Leonard (1991) finds that men reduce their caloric intake and physical activity during the non-agricultural season in order to protect their children from nutritional stress.

The unifying theme for these ecological, economic, and biological anthropologists is their ability to uncover and underscore the human capacity to learn from and adapt to uncertain environmental contexts. However, because subsistence societies are integrated into networks of political and economic influence that occur at a larger scale, there is a need to identify that both risks and the capacity to access food are influenced by forces and actors external to the immediate ecological or economic context. This is articulated as a need to demonstrate how agricultural production, and food security, requires stable conditions of access and rights to productive resources necessary for accessing food (Berry 1984).

Entitlement failure is a concept that originated with economist Amartya Sen (1981) and was further developed by Dreze and Sen (1989) to counter the food availability and decline discourse that proliferated in the 1970s. This approach directs attention to food acquisition rather than food production, asserting that availability alone does not determine food security (Baro and Deubel 2006). Entitlements are understood as a set of alternative commodity bundles that are constructed by the political economy and that can be used to acquire food (Watts and Bohle 1993). Ethnographers have captured the role of political economy in interfering in entitlement access by demonstrating how factors of migration (Richards 1939; Cliggett 2005), changes in land accessibility and tenure (Cliggett 2005; Leatherman 2005; Fleuret and Fleuret 1991; Li

2014; Scheper-Hughes 1992), increased costs of subsistence inputs (Panter-Brick and Eggerman 1997; Ford 2009), state patronage (Nelson and Finan 2009), and volatile market prices (Hadley et al. 2011; Watts 1988) destabilize entitlements, and thus, increase exposure to risk of experiencing food insecurity. Such destabilizations also extend to nutritional outcomes. The transition from subsistence to commercial agricultural production is identified as a mechanism responsible for poorer nutritional outcomes (DeWalt 1998; Dewey 1981; Fleuret and Fleuret 1980).

Entitlements theorization is heightened by extending the scope of inquiry from individual capacity to cope to the consequences of coping, especially in relationship to the larger political economy (Watts and Bohle 1993). The idea behind this extension is that even when an individual may appear to successfully cope with an immediate threat to their food security, the coping mechanism employed could hinder future security. Conversely, future security could be enabled by an action that appears to be a failure to cope with a risk to immediate food security.

This is a trend in theory building also found in human biology modeling. Biological anthropologists importantly point out that biological plasticity should be carefully considered. They argue that adaptive responses must be both effective in the most immediate sense and efficient for the longer term. This admonition draws attention to the importance of thinking about adaptation as not just an interaction, but as a process with particular consequences or outcomes for long-term growth and development (Huss-Ashmore and Goodman 1988; Pelto and Pelto 1989; Messer 1986). Through such a perspective, adaptability, rather than an ideal “fit” between humans and their environments is the protocol for understanding biological change rather than a binary

system of classifying such change as adaptive or maladaptive (Crooks et al. 2007; Dufour 2006).

This extension from coping to consequence is especially bolstered by the concept of vulnerability. Vulnerability is commonly understood as exposure and sensitivity to stressors or risks. Adaptations, in turn, are changes in the system to better deal with this exposure and sensitivity (Adger 2006). The natural hazards tradition identifies outcomes as vulnerable and not the infrastructure that constructs such conditions (Dilley and Boudrea 2001; Wisner et al. 1994). Other approaches, grounded in theories of political ecology and political economy focus on multiple causal factors and look for differential impacts and differential capacities to cope so as to identify a state or condition as vulnerable (Eakin and Luers 2006). Attention to multiple causal factors gives prime analytical attention to processes of change as well as the variability in how that change is managed. When this approach is empirically advanced, it identifies a multidimensional social space defined by political, economic, and institutional capabilities of people (Watts and Bohle 1993). This elevates entitlement theory from empirical investigation of food insecurity to a systemic exploration, with heightened analytical application (Yaro 2004).

With this turn to vulnerability, advances have also been made in how nutritional outcomes are interpreted as a product of complex sociopolitical, economic, ecological and bodily processes (Goodman and Leatherman 1998). Longitudinal data from Peru shows how the poorest communities and the poorest households within communities have the worst diets and nutritional outcomes, thereby identifying particular spaces of vulnerability within a broader geographical and economic context (Leatherman 2005). Huff (2014: 102-103) replicates this approach but finds a need to focus not just on long-

standing circumstances, but also context-specific factors and strategies implicated in changing political ecologies to show how not just who is vulnerable, but how vulnerabilities are constructed and reacted to. By addressing how different groups of people may have different exposure to and capabilities to contend with risks, vulnerability is an analytical tool that isolates the political and economic sources of food insecurity or the graver consequences of undernutrition.

Though pushing the food insecurity dialogue forward, a singular focus on vulnerability or entitlements has been criticized for certain limitations. Broadly, these limitations lie in attenuating agency and for neglecting to understand how people make decisions about, or prioritize, their food needs (Yaro 2004). Such focus can overlook distinct patterns of asset management in periods of severe food insecurity (Corbett 1988). A broader view of asset management, rather than just food management, helps uncover how households prioritize the maintenance of future income-generating capacity rather than the most immediate needs.

In looking at the Sudanese famine of 1984-1985, de Waal (1989) found that because the Sudanese commercial economy was a continuously fragile system, people were capable of negotiating such fluctuation. Furthermore, households had the financial means to purchase grain, but opted not to in order to purchase the agricultural inputs that would ensure future food security. Hampshire and colleagues (2009) found similarly in Niger, where the viability of long-term livelihood proved more of a concern than meeting immediate food or health needs in the 2008 food crisis. deGariné and Koppert (1988) found that alleviating food shortage in savanna ecologies in Chad and Cameroon was not as high of a priority as was the pressure to obtain social prestige. Such analyses reflect a

broader livelihoods approach, where food is one of many material and social needs that must be negotiated by households (Adams et al. 1998; Carr 2006; Davies 1996).

Though the ways in which people make a living has always been a prominent focus of economic anthropology, the theoretical and discursive development of the concept as systematically employed in both research and practice is credited to Chambers and Conway (1992). Their framework connects assets and entitlements to livelihood strategies (Scoones 2009). A key attribute of their consideration is that livelihoods are diverse strategies of socio-economic activity that are capable of contending with the risk of uncertainty. Batterbury (2001) declares that diversification should be regarded as an active social process. He cautions that diversification should never be considered homogenous within a community and that intent to explore the heterogeneity enables comprehension of the actions and logic behind people's actions. A prominent example of this comes from East Africa where pastoral populations are increasingly adding agriculture to their portfolio because they do not want to rely on selling cattle in a monetized economy (Holtzman 2009; McCabe 2003).

Diversification of livelihood is generally found to be a positive feature in studies of how individuals or households cope with food insecurity. For example, households in rural West Africa with a more diverse livelihood base were more likely to be food secure through either better harvests (Becker 2000) or more income with which to purchase food (Roncoli et al. 2001). This path of analysis extends to findings about nutritional outcomes. Farming households in Zambia that were able to diversify economic activities beyond agriculture presented the best height for weight scores for children (Crooks et al. 2007). Other research cautions that diversification is not necessarily always a positive

response to vulnerability. This was shown to be the case for households engaged in wage labor work, as this work conflicted with food production (Bezner-Kerr 2005).

As the predominant framework by which food insecurity research and discourse is currently designed and analyzed, critiques of the vulnerability and livelihoods paradigm are important to recognize. Carr (2006, 2013) is concerned that while the livelihoods approach has facilitated a framework for understanding food security as part of a multi-objective strategy, there remains a need to focus on the role of social, and not just the material relations in food provisioning. He suggests integrating analyses of power and knowledge, as bound in biophysical and economic conditions, as fundamental starting points for understanding coping behaviors.

These concerns can be addressed through studies of the dynamics of the socio-economic structures and relations of households as units of production and consumption (Guyer 1981; Whitehead 1981). Attention to gender relations rather than individuated gender domains is a pressing analytical concern of these studies, with marriage viewed as a cooperative effort, without either party being necessarily self-interested nor working exclusively towards the collective good (Greenough 2012; Jackson 2007). This perspective forces explorations of livelihoods through the socio-cultural expectations of gendered contributions to the household.

In this way, if adaptation to any vulnerable context is considered to be shaped by livelihood opportunity, livelihood opportunity, in turn, is shaped by gendered norms that direct men's and women's social and economic obligations. With the critical application of political ecology to this paradigm, it becomes possible to further demonstrate how these gendered norms do not exist in isolation from the surrounding environmental

conditions or the local or global political economy. The fusion of such household and livelihoods approaches produces telling narratives about how vulnerability is not only structured, but reacted to. As a fluid socio-ecological and socio-economic context intersects with gendered opportunities and constraints, men and women are differentially exposed to risk via their different capacities to cope (Carney 1993; Carr 2008; Schroeder 1993).

With research increasingly invested in how populations are adapting, and are predicted to adapt to climate change, adaptive strategy studies have extended adaptive strategies studies into another dimension of consideration, that of resilience. In its ecological usage, resilience refers to the capacity of components in a non-equilibrium system to absorb disturbances and still retain the same structure and function (Nelson 2011). As applied to social systems, Bene and colleagues (2016: 125) assert that resilience differs from vulnerability in its conditioning of humans as active and not just responsive actors within a system. Instead of merely identifying a constraint, resilience pushes analysis to solutions.

Resilience is increasingly applied to the food insecurity paradigm, with primary focus on the resiliency of food production systems (Headey and Barrett 2015; Hodbod and Eakin 2015; Watts 2014). Some scholars express concern that the uptake of resilience into broader food insecurity discourse via food production systems de-politicizes a highly political problem. Because resilience is a concept anchored in an assumption that uncertainty, rather than stability, is the norm, a critique of the growing usage of resilience is that ownership of problem solving transfers from governing institutions to individuals



who must design their own purchasing power to navigate a global market place (Jarosz 2011; Watts 2014; Welsh 2014).

Anthropological engagement in bio-cultural human adaptive processes provides a foundation for understanding how subsistence populations in the past and the present contend with the risk of uncertain ecological contexts as well as food shortages that may result from such risk. These studies demonstrate the dynamism of environments and how humans apply accumulated knowledge and social means to adapt their economies to their environments to meet food needs, thus establishing that diversity in food production systems is not a detriment to food availability, but an advantage. Models of human adaptation are models that demonstrate how humans employ systems and processes that enable creativity in working within constraint. With the integration of social theory, it becomes possible to see how food insecurity is a condition tied to larger structural issues influencing economies and ecologies.

From this body of literature, and the ongoing evolution of social and ecological theory that guides it, what becomes clear is that food security is a condition of management, either at the level of food production, how food is accessed, or how the body adapts to what it is or is not provided nutritionally. Such management is grounded in diverse, heterogeneous socio-economic processes of livelihood that precede biological plasticity. Diversity, not uniformity, is the resounding message from this collective body of literature. Because the conditions that cause food insecurity are complex, and non-linear, the responses and reactions must also be diverse. This body of scholarship therefore directly confronts a long-resonating idea that food insecurity is a product of linear processes that can be solved with linear solutions (Berry 1984). What is missing

from this understanding of food insecurity is an experiential component. As will be seen in the next section, the experiential side of food insecurity broadens comprehension of the role of food in human culture and human well-being.

### **Food Insecurity as an Experience of Subjective Suffering**

While a substantial body of literature demonstrates how and why food insecurity is a condition of managing food, there is a growing concern that other dimensions of food insecurity are overlooked in research. Diverse disciplines agree that food insecurity discourse and metrics should be informed by an understanding of food as a holistic element, incorporative of cultural and biological importance. Criticism is directed at creating better methodologies that can close the gap between a widely accepted and encompassing definition and the measurements employed (Coates 2013; Hendriks 2015; Yates Doerr 2015). A growing body of scholarship directs attention to forms of hunger that go unrecognized and unacknowledged in scalable metrics (Cousins 2016; Hayes-Conroy and Hayes-Conroy 2013; Guthman et al. 2014; Kimura 2013; Scrinis 2013; Yates-Doerr 2015). Nichols (2015: 183) asserts that by understanding the roles of embodied perceptions and beliefs in relation to food systems, research enables actual consideration of the oft-stated goals of viewing food security through a lens of subjective experience.

Motivating this emerging body of scholarship is the desire to show how food insecure populations are left out of the conversation by having their experience measured, rather than fully engaged. This addresses a challenge laid out by medical anthropologists João Biehl and colleagues (2007) to heighten experiential orientation in research. They encourage anthropologists to engage with subjectivity as a contention with struggle and

to do so by considering the relationships between social control, agency, and culture. In this second half of the literature review I provide an overview of how anthropology and related disciplines approach subjective experiences. Specifically I focus on the ways in which these researchers look at how contexts of food insecurity are interpreted and felt by those experiencing it, thereby acquiring the subjective perspective on rather than the just the identification of a condition of suffering.

Phenomenology is a central theoretical and methodological foundation for the subjective exploration of distress. Anthropologists employ phenomenological approaches to understand what it means to be human, to have a body, to suffer, and to heal (Desjarlais and Throop 2011). Used largely by medical and psychological anthropologists, phenomenology enables a perspective of the mind and body as integrated, substantive substrates of experiences that can link socio-cultural contexts to individual bodies (Hruschka et al. 2005; Worthman 1992). Phenomenological approaches seek to capture experience rather than symptoms and to further distinguish between objective and subjective ways of describing that experience (Desjarlais and Throop 2011; Kohrt and Harper 2008; Lührman 2006).

Emotions are central to this as they are the way in which the brain speaks to the body and become embodied (Worthman and Costello 2009). Embodiment is a broadly used term to conceptualize the body as not only an object, but as a locus from which experience with the social and political world is arrayed (Csordas 1990; Krieger 2005; Moss 2005; Scheper-Hughes and Lock 1987). Tracing how emotions are embodied is a way to identify how illness is socially and politically constructed before it becomes a psychological or biological reality. These conceptual layers are entryways to explore how

suffering is embodied and provide insight to the subjective experience. This successive focus enables what Eggerman and Panter-Brick term the anthropology of suffering, a body of work that gives voice to the physical and emotional pain of contending with poverty, marginalization, and routinized violence (2010: 72).

Bio-cultural anthropology has taken an approach to suffering that utilizes concrete and replicable social models, such as changes in lifestyle or social status to explain variable health outcomes (Decker 2000; James et al. 1987; McDade 2002; Scotch 1963). Increasingly, these models incorporate the role of perception as a mechanism useful for explaining how inequalities in health are socially structured. Cultural consonance modeling has been a particularly productive technique employed. William Dressler and colleagues use this methodology to uncover localized conceptualizations of culture and then measure how people perceive their ability to engage in these relevant cultural practices so as to identify an individual's congruence or incongruence with their culture. Through this modeling technique, they have found that incongruence with relevant cultural practices in both the United States (Dressler and Bindon 2000) and urban Brazil (Dressler et al. 2005) is associated with higher blood pressure. Collectively, these bio-cultural studies demonstrate how distress that originates in our social, economic, and cultural milieus manifests, in deleterious ways, in human physiological processes both within and across generations (Chishom and Coall 2008; Flinn and England 1995; Pike 2005).

Another approach to the anthropology of suffering is through what Brandon Kohrt (2004) terms ethnographic epidemiology. Kohrt attests that when researchers employ ethnographic techniques to better understand a localized perception of the causes of and

experience with distress, it becomes possible to adapt tools such as standardized surveys on the symptoms of distress appropriately. By operationalizing ethnographic epidemiology, Kohrt demonstrated how older women in post-socialist Mongolia contending with integration into a capitalist system experienced symptoms of pain, fatigue, and swelling (Kohrt 2004). These symptoms are components of the illness known as *yadargaa* and comparative analysis showed that they were only 33% sensitive to a survey that measured clinical depression. Using a similar approach, Pike and Williams (2006) uncovered how living in a context of violence in Kenya resulted more prevalently in somatic rather than psychological or cognitive expressions of distress (Pike and Williams 2006). As such, the ethnographic epidemiological approach validates that distress exists in insecure contexts, is relative to the experience of particular social and economic contexts, and results in symptoms that may not reflect what is readily found in biomedical tools.

As a widely experienced condition, interest in food insecurity as a factor of distress has grown, with expressed interest in implementing the most appropriate methodology (Hadley and Wutich 2009) as well as strong theoretical grounding (Wutich and Brewis 2015). These inquiries have resulted in significant findings in Tanzania and Ethiopia, where cross sectional data demonstrates symptoms of anxiety and depression associating with food insecurity (Hadley and Patil 2006; 2008; Hadley et al. 2008). Panel data in Zambia provides stronger evidence for food insecurity's causal role in mental health outcomes (Cole and Tembo 2011). Studies that assess how social features may intersect with the experience of food insecurity also produce interesting results. In urban Ethiopia, food insecurity is found to predict poor mental health outcomes among a group

of community health volunteers, but the severity of either experience does not increase with the sharp increase in food prices in 2008. This suggests social networks help buffer the extreme effects of food insecurity (Maes et al. 2010).

The measurement of symptoms of distress and food insecurity empirically establishes a relationship between the two experiences, with an increasing likelihood that food insecurity is culpable in causality. There is ongoing work, however, to clarify the pathway by which being food insecure results in symptoms of distress (Weaver and Hadley 2009). Several researchers propose that the pathway could be one stemming from the worry or anxiety over being able to provide food in an uncertain context or that the pathway could originate with social guidelines that can make one feel stigmatized for not having enough or the right kind of food (Weaver and Hadley 2009; Weaver et al. 2014).

Directing focus to narrative accounts of illness, where the body is more broadly positioned as the locus for relaying perceived well being can help clarify how, as a subjective experience, food insecurity results in distress. Like the epidemiological approach, this technique used widely by psychological anthropologists gives coherence to the social, economic, and political events that coalesce in the experience of suffering (Kleinman 1988). Unlike the epidemiological approach, however, illness comes to light not as a series of symptoms that are either present or not present, but as a series of experiences extending from networks of meaning and social interaction (Good 1977). For example, among Sudanese refugees in Egypt dislocation is spoken of as an illness felt in the heart, the location where the social and emotional pain of marginality accumulates (Coker 2004).

Feminist theorization of bodies as surfaces that transcend binary categorizations between the natural and the cultural and the universal and the unique also assist in accessing subjectivity (Longhurst 2005: 338). Medical anthropologists Nancy Scheper-Hughes and Margaret Lock's interest lies in demonstrating how the body is individually and collectively experienced, represented in symbolic and metaphorical idioms, and subject to regulation, discipline and control (Scheper-Hughes and Lock 1987). To do this, they identify three theoretical and epistemological traditions that map onto three different, but overlapping bodies. 1) Phenomenology encompasses the lived body, 2) structuralism and symbolism captures the social body, and 3) post-structuralism encompasses the political body (1987:8). They further posit that emotions are the vectors by which the lived body is experienced and the status of the social and political bodies projected (ibid: 28). From the perspective of political ecology, because the three bodies approach deconstructs the Cartesian binary of mind-body, it elevates relational thinking and analysis (Jackson and Neely 2015).

In her foundational work on the embodiment of hunger in urban Brazil, Scheper-Hughes' (1992) positions the body as the central point of analysis on hunger in a way that a paradigm of food insecurity does not allow. By identifying *nervosa*, a "master illness" with an explanatory model similar to the West's concept of "stress" she finds a category of distress closely associated with hunger (ibid: 175). Individuals familiar with this illness often juxtapose idioms of hunger with idioms of nervousness and people are more likely to express their misery in terms of *nervoso* than in terms of hunger. This kind of fluid dynamic between the mind and body is found in other contexts as well. In an urban US context women explain how their "hunger of the mind," the loss of appetite due to the

psychological distress of food insecurity, exacerbates their “hunger of the body,” the physical pains of not eating (Chilton and Booth 2007).

Paralleling the three bodies approach, and one especially suited for considerations of the relationship between food and bodies, is Allison and Jessica Hayes-Conroy proposition of the visceral body. They situate the visceral body as a realm of internally felt sensations, moods and states of being that are tied to a sensory engagement with the material world (2008: 462). This idea is extended with their proposition of a methodological framework they call the political ecology of the body. The political ecology of the body places the emotive or affective body at the center of analysis and in relation to structural forces, relational ontology, and knowledge (Carney 2014; Hayes-Conroy and Hayes-Conroy 2013).

In assessing the merits of increased theorization of the feeling body, Goodman (2014) notes that because qualities associated with food and health (such as taste) are indeterminate, but conditioned and contingent concepts, the subjective encounter provides better understanding of where and how difference in food preference may emerge. With the growing concern of researchers who find that the influence of culture is often overlooked in food insecurity analysis, what this emerging scholarship on the body contributes is a way to connect to how people subjectively relate to what they are or are not eating. This is an approach that invites holistic inspection of food preference and how preference is aligned with notions of health and well-being. By more directly engaging the body it becomes possible to illustrate how foods do or do not contribute to health. The assumption often underlying interventionist dialogs--that impoverished people do not understand how to “properly” eat and that their food and nutritional



insecurity can be alleviated through education and exposure-- can therefore be sidelined (Carney 2015; Hayes-Conroy and Hayes-Conroy 2013; Minkoff-Zern 2012).

Several recent studies demonstrate these complex interactions between the body, food, and health. In Guatemala, Yates-Doerr (2012) highlights how Mayan communities consider health as a process to be enacted, not a fixed attribute within a food. Health in this context is determined through a series of relations to different foods consumed in accordance with the state of the eater. This is similar to research from Mozambique that finds that local eaters recognize the importance of *vitamina* in their foods, but such classification extends beyond the intrinsic properties of the food. As perceived in this context, the *vitamina* of foods can be transferred from the emotive state, or experience of eating. Qualities such as pleasure, satiation, and happiness can all make food rich in *vitamina* (Huhn 2013: 187). Conversely, negative affectations, such as inadequacy or anxiety could reduce the *vitamina* content. Consuming food in such a negative affective state can further make an individual feel emotionally worse than the actual pangs of hunger (ibid: 205).

Huhn's work in Mozambique additionally disquiets the appropriateness of categorizing dietary practice as rote simply because it does not express material diversity. She underscores the need to view local foodways as symbolically rich and complex even in the midst of material deprivation and seemingly unelaborate culinary appeal (ibid: 206). Studies elsewhere also bring this to light. Despite the seeming repetitiveness of meals, consumers taste difference in ingredients based upon locale as well as identify different kinds of health benefits afforded by different varieties of ingredients used for the same kind of everyday foods (Finnis 2007; Spittler 1999; Thies 1999). Such studies

importantly challenge notions of how food diversity and quality, and thereby food security, should be considered.

These detailed accounts of the bodily experience with food and hunger also amplify understandings of dietary change, particularly as it involves the integration into more strident capitalistic food systems. Women in Colombia and the United States migrating from agrarian settings to urban contexts speak of the negative effects of the transition from a subsistence to an industrialized diet on their bodies (Carney 2015; Hayes-Conroy and Sweet 2015; Minkoff-Zern 2012). Similarly, in Kenya, farming and pastoral populations retain a strong value for the healthful merits of sorghum, even as they become more reliant on, and dissatisfied with the role of maize in their bodily processes (Holtzman 2009; Noack and Powu 2015).

Several case studies from India demonstrate similar patterns of acceptance of new dietary practice, but simultaneous dissatisfaction in how such a new diet suppresses health. In the Koli Hills of India, farmers who transitioned from the subsistence millet production in order to meet a growing market demand for cassava, are left desiring their former diet. Their new reliance on purchasing rice leads to a diet bereft of the healthful qualities attributed to different varieties of millet, especially contributions to strength and illness prevention. At the same time, this population declares that the income accrued through cassava production is necessary for social needs and desires such as weddings (Finnis 2007, 2008). Similarly, in sub-Himalayan India, Nichols (2015) found that land used for cereal and legume production faced increased competition from horticultural crops. Accompanying this this switch to horticultural crops was an increased usage of inorganic chemicals for soil regeneration. As cereal crops were grown less, there was

less fodder for animals to consume and less manure to apply to the remaining cereal fields. Resulting from this situation was a local perception of chemical pollution of food and, thus, chemical pollution of bodies.

Holtzman (2009:9) identifies this simultaneous acceptance and repulsion as a disjuncture of conflicting narratives, whereby people view their changing diet both as progress and cultural decay. He finds that people mix and match these narratives to make sense of their realities. Nichols (2015), building from Holtzman, suggests viewing these circumstantial perceptions and behaviors about shifting modes of production and consumption as an experience of what Ramamurthy (2003) targets as perplexity. To Ramamurthy, perplexity is a way to describe the experiential contradictions of globalization as a series of processes that overwhelm subjects with conflicting reactions to their circumstances. Positioning dietary change as a process of perplexity demonstrates why dietary transitions must be understood within intersecting ecological, economic and political contexts so as to understand the interactions between local aspirations and local resources (Finnis 2007: 343). Additionally, the positioning of food insecurity as a condition that occurs as a result of changing dietary landscapes interestingly challenges how food availability and access are unique products of situational perception rather than an absolute or universal.

The capability to address relationality between environments, foods, and bodies enables a perception of health as not only socially constructed, but as a process of social relations that can produce collective, rather than individually situated health. Using comparative data from the United States and Guatemala, Yates-Doerr and Carney (2016) find that women see their role as meal providers as a role of providing health, thus

suggesting that when they are not able to provide meals, they may find themselves culpable in denying their family health. In an urban context in the United States, familial harmony is identified as important to cultivating health of the collective unit. This goal of collective health remains the primary concern and can result in actions and behaviors that can contradict notions about the role of food and health in individual health status (Garro 2011). Similar to this finding in the urban West, in rural Burkina Faso research suggests that food insecurity itself is not necessarily distressing, but a mechanism that disrupts household stability and cohesion resulting in distress (Nanama and Frongillo 2012).

By addressing localized decision making processes regarding food production, purchase, and consumption, a body centric perspective on food insecurity enables food insecure populations to define their experience and to demonstrate active and engaged knowledge of bodily need and how food meets those needs. This is what Cousins (2016: 9) refers to as knowing what is meant by hunger through the particularities of the life-worlds in which such experiences are occurring. By placing the subjective experience of the body as the locus, food insecurity research can delve into realms of perception unfamiliar to methodology reliant on standardized surveys. Factors such as satisfaction and satiation move to the forefront. This can equip the dominant paradigm with the means to truly capture how features of being a culturally situated eater, such as preference and taste produce a sense of security with diet.

## **Conclusion**

The intent of this literature review was to show how anthropologists and other related disciplinary scholars have and continue to investigate hunger as a phenomenon. I

have identified two distinct camps that I see as contributing important empirical evidence to how food insecurity is managed as a condition and how it is subjectively experienced. A pursuit of bio-cultural anthropology over the past decade has been to highlight the subjective side of food insecurity. The ethnographic epidemiological approach has significantly brought attention to the role of food insecurity in poor mental health outcomes. Such micro-level analysis has underscored that to be food insecure is to feel distressed. While focus in this community of scholars remains focused on discerning the pathway by which this occurs, I argue that it is simultaneously important to begin to focus not just on the relationship between these variables, but to make food insecurity a more subjectively oriented concept. In other words, we should also work to ascribe food security as a factor inherent in human emotional life rather than as a factor that can measurably associate with emotional life.

The advantage to this emerging political ecology of health perspective is its ability to do just that. As has been identified by recent critiques of food insecurity scholarship, research continues to produce discrete stories about the economic and ecological systems that produce nutrition and the cultural systems that produce preferred foods. Bridging this gap is essential, and as recent research oriented in political ecology of health frameworks has shown, these stories are not tangential, but extremely mutual (Finnis 2008; Huhn 2013). By using the body as a unit of perception and feeling, capable of interpreting bio-cultural needs and desires, the body can draw connections to the political and economic structures that constrain or deny access to the foods that foment health as a product of dually met biological and cultural needs and desires.

This political ecology of health perspective therefore demonstrates a way to conduct research and analysis that connects holistic causes of food insecurity to holistic effects, thereby creating an approach that segues into the role of food sovereignty in the achievement of food security. Distinguishing the relationship between (rather than distinguishing the differences between) food security and food sovereignty will necessarily help food insecure populations dictate their own solutions. As stated by Lucy Jarosz (2014: 179):

Reframing food security and food sovereignty as relational has the powerful effect of linking food access to autonomy and the transformation or recuperation of food systems that nourish people in multidimensional ways and are deeply anchored in ideas of justice, ethics, responsibility and caring for oneself, others and nature.

Ensuring that research on food insecurity can embrace the idea of food sovereignty is increasingly important because, as will be addressed in the next chapter, resolving food insecurity is an enterprise entwined in technocratic understandings of food insecurity as a condition solved by economic rationality.

This agenda endures despite the twenty-first century trend for populations in industrialized nations to morally and economically support the de-industrialization of their own food systems (see Pollan 2007, 2009). As populations that are relatively food secure become increasingly fond of drawing connections between the diverse produce cultivated on local farms and the local flavors and textures associated with this mode of production, ensuring that food insecure populations are allowed to design their own food access is essential to making the global food system equitable. Populations everywhere should be equipped to engage in the universal act of eating in the manners relevant to their local ecologies, economies, and cultures.

### CHAPTER 3

## THE POLITICAL ECONOMY AND ECOLOGY OF FOOD INSECURITY IN NORTHERN GHANA

### **“Ghana is Hot”: The Contemporary Ghanaian Political Economy**

In early January 2015, the final month of fieldwork, Abdulai and I sat on the stoop of a small shop in Chansa waiting for an interviewee to arrive. Prone to making use of such downtime by turning my research assistant into an interviewee, I asked him about graffiti that decorated the storefront. Written on the turquoise wall in small chalk script was “Ghana is hot” (Figure 3.1). This was the first time I had seen this phrase. Messages written in paint or chalk are common on homes throughout Ghana. These messages, such as “Who knows tomorrow?” or “If God say yes, who say no?” usually evoke unifying sentiments of hope and perseverance. This one, however, proved different. Abdulai explained the sentiment as a way to articulate that Ghanaians struggle in their day-to-day life because of their existence in this particular nation-state.



**Figure 3.1: Photo of graffiti expressing economic hardship in Chansa**

This is a statement that seems to be at great odds with the “Africa Rising” narrative paraded on the cover of *The Economist* (2011) and *Time* (2012) to persuade global economic actors to look at Africa not as a continent in need of aid, but as a continent ripe for investment. As stated by Thomas Blaser (2013) for the critical media blog *Africa is a Country*, “Within a short period of time, the global, corporate discourse on Africa has swapped a refrain of hopelessness with a near eschatological discovery of a new El Dorado—a place of gold from which global capital hopes to regain its lost mojo.”

Since discovery of oil off of Ghana’s coast in 2007, and coupled with as successful transition to stable democracy in 2000, Ghana has been a recipient of unprecedented foreign investment that has initiated fast paced macroeconomic growth. In 2010 this growth culminated in the transition from low to middle income country. This categorization was the result of a recalculated GDP per capita figure, one inclusive of the burgeoning financial and telecommunication sectors, and one that placed Ghana above the threshold for financial assistance from the World Bank (Moss and Majerowicz 2012).

In Kokomlemle, the neighborhood in Accra where I lived for 6 months in 2013, this economic boom was visually apparent. Societe Generale, an international investment and corporate bank, rapidly built a multi-story building on the major Ring Road. Directly across the street, uniBank, a national operation, purchased the plot of an evangelical church to expand its own operations. While I was grateful that this transaction displaced the worshippers whose late night and electronically amplified worshipping often kept me awake, it did seem quite a powerful statement of the power and authority of capital to usurp the power of religion in a nation where religious faith is one of the most important



social signifiers. By the end of 2014, a series of locally owned shops right in front of the Societe Generale building were torn down and replaced with a currency exchange business. This new business also displaced the local hawkers who sold water and other miscellaneous items to the traffic that was often stalled at this busy intersection.

The way that political discourse mapped onto this financial boom was also quite apparent. As the nation neared the ruling from the Supreme Court about the contested 2012 election of President John Dramani Mahama, public discourse and media reports were heavily imbued with the need for citizens to remain peaceful regardless of the decision. A banner draped from the upper floor of a mid-scale hotel that often hosted business travelers declared, “Our peace is prolific.” In my field notes I started referring to this public discourse as “peace mongering.” The intensity with which this message of peace was pushed seemed less to do with the preservation of democracy and more to do with maintaining the security and stability that attracted investors to Ghana. The maintenance of peace seemed to quite strategically align with the need to maintain foreign interest and investment that was stimulating this development.

By late 2013, the visual representations of Ghana’s upward economic swing began to be overwhelmed by the always present, and increasingly publicized, distress of those who were left out of this growth. In reporting on Ghana’s middle-income status, the World Bank reluctantly acknowledged that alongside this macroeconomic transition, the Gini coefficient was increasing and disparate rates of poverty were present. The report underscored concentrated poverty in the northern regions of the country. Policy recommendations from the World Bank included reducing the vulnerability of those who were “left behind,” (Molini and Pierella 2015), an ambiguous statement that speaks to

what Richard Peet refers to as the neoliberal attempt to “keep up with the casualties” (Peet 2007:182).

The distress of the casualties became more apparent as they became unable to cope with the austere measures implemented to counter the effects of an economic slump that immediately followed Ghana’s rise to middle-income status. In 2013, the overlapping and ongoing occurrence of a stagnating GDP, an increasing fiscal deficit, and the devaluation of the national currency became factors that led to the financial distress of the state and its citizens (Younger 2016). Government response to such cumulative financial pressures included removing a national subsidy on petroleum products, thereby increasing fuel and transportation costs and initiating protests in Accra about the increased costs of living (BBC 2014a). In a visit to Accra in July 2014, the street vendor I regularly purchased fresh fruit from complained about the increased costs of *kenkey*, a fermented maize porridge that is one the cheapest prepared foods to buy and a meal that many people are reliant on.

At the same time as these protests about economic hardship, a group of fans from Ghana who traveled to Brazil for the World Cup sought asylum, citing religious persecution in Ghana. Underscoring Ghana’s long-running history with religious tolerance, a story by the BBC reported that Brazilian authorities believed many of the Ghanaians were looking for work in a region of Brazil already inundated with foreigners seeking the same (BBC 2014b). Meanwhile, as Ghanaian citizens were seeking economic asylum in Brazil, the Ghanaian government was flying money over to the national football team, the Black Stars, because the footballers threatened to drop out of the World Cup if the government did not disperse FIFA funds that were legally theirs.

The wind in the sails of Ghana, as a middle-income country independent of international financial assistance, ended in early 2015 when negotiations for a loan were initiated with the International Monetary Fund (IMF). These negotiations secured a three year deal with the IMF to alleviate the economic crisis in the form of a nearly one billion dollar loan with austerity measures attached. Such measures included increased fuel prices, an end to energy subsidies, and a freeze on hiring public sector workers (BBC 2015). Such measures parallel the Structural Adjustment Program that Ghana adopted in 1983 in accord with the IMF and World Bank (Yaro 2013).

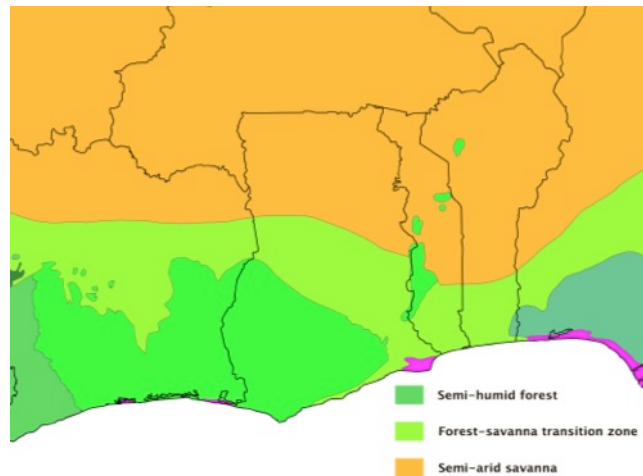
Despite the “Rising Africa” narrative, what is apparent is that Ghana remains quite hot for rural and urban populations. The chaotic national economic backdrop is one that might have helped reinstate some of capital’s lost mojo, but it is not reducing poverty or inequities in Ghana. The question that emerges from looking at the intersection of a neoliberal tinged meta-narrative and local idiom is, who is or isn’t rising with Africa? In other words, for whom is Ghana hot? (Lemma 2013).

These are questions that ethnographers throughout West Africa continue to address, examining how processes of the neoliberal world order create pockets of and reactions to socio-economic inequities (Appel 2012; Carr 2011; Chalfin 2010; Piot 1999; Rouse 2014; Watts 1983; Shipley 2013). While contemporary patterns of the global neoliberal economy identify pockets of economic marginalization, to understand the gross regional disparities in hunger between southern and northern Ghana it is essential to look at the colonial encounter. This period of history created certain patterns of inequity that contemporary neoliberal policies and practices continue to exacerbate rather than alleviate (Plange 1979; Songsore 2001: 208).

In what follows I assess why the north remains the poorer and hungrier region of Ghana by focusing on how it has been integrated a global economy in ways that depleted and altered local socio-economic practices. I first detail historical processes of pre-colonial economic practice and colonial economic policy. I then outline how food insecurity has been conceptualized by international institutions since the late twentieth century to establish how, despite an ongoing evolution of the concept, contemporary food security governance regimes do not enact the potential of the concept, but instead rely on assumptions that what solves food insecurity and poverty is agricultural technology and markets. This exploration helps situate why food insecurity is an issue in northern Ghana and positions the solutions that are advanced as tied to global economic interests rather than the possibilities of local livelihoods (Yaro 2013).

### **Colonial and Post-Colonial Foundations of Regional Food Insecurity**

Ecological variation within Ghana is the foundation for how regional social and economic disparities in Ghana were constructed and why they remain. From an ecological perspective, Ghana can be divided into three distinct zones. Stretching from the Gulf of Guinea coast northward, semi-humid forests occupy the lower third of the country, a context where highly valued commodities such as rubber, palm oil, and cocoa can be cultivated. From the midpoint of the country to the upper third, the landscape is that of a transitional forest-savanna zone, a socio-ecological system well represented in research that disavows farming induced deforestation in West Africa (Fairhead and Leach 1995). The upper third of the country is dominated by a semi-arid savanna system, an ecological region identified by the earliest European actors as ecologically risky and therefore economically risky (Figure 3.2)



**Figure 3.2: Ecological Zones of West Africa**

While early colonial politics labeled the northern savanna as unproductive, details from pre-colonial history establish that the West African savannah environment was economically productive in a manner quite enabling of food security. This is the ecological region that that supported the development of West African empires such as the Songhay and Mali states that reigned extensively until the sixteenth century. Historian James McCann argues that the rise of these political entities occurred largely because of a semi-arid ecology equipped to produce portable and divisible grain crops. He further argues that this development actually advanced the northern populations over populations residing in the forests, where tuber based farming was the norm, an agricultural economy that could not support the development of such strong centralized states (McCann 1999: 114). In recent analysis of the food based archaeological record of pre-European contact societies living in Ghana's wooded savanna, Logan (2016) finds that in three distinct eras prior to European arrival, including periods of severe drought, food availability did not significantly decline. This indicates that food insecurity, if present during those times, was not a feature of the agricultural economy, but of social and economic relations structuring food access. It is also worthy to note that prior to the era of European contact,

crops such as cotton were often produced in surplus in northern Ghana and traded to the south through river and overland trade routes (Sutton 1989).

By the seventeenth century, with the disbanding of the large West African empire states, populations in the savanna re-emerged as small and largely mobile systems of mixed hunter/gatherer and subsistence farming societies. Simultaneously, the Akan society, based in the dense humid forests south of the savanna, began to expand. Their expansion relied extensively on taking advantage of the newly decentralized political structure of the northern populations. Labor was extracted from the north for the purpose of clearing the forests for more extensive cultivation (McCaskie 1995; Wilks 1975). By the eighteenth century, this Akan grouping emerged as the Asante state. As this was a time period coinciding with increased European interaction in West Africa, primarily through the extraction of slave labor to the American colonies, the Asante State was targeted as a key player in the European extraction of labor.

Though by the eighteenth century the Asante state was no longer dependent upon slave labor for its expansion, it remained active in the slave trade by acting as an expansionist power reliant on tributary extraction and raiding of northern populations (Stahl 2001). Raiding supplied captive labor that was exchanged for guns with European powers and played a vital role in integrating the Asante economy into the transatlantic economy (McCaskie 1995; Stahl 2001). The effects of these slave raids in the north linger. Physically, the landscape retains remnants of mud brick walls built to surround homesteads and protect against raiders (Swanpoel 2013). Emotionally, Saaka (2001) asserts that throughout the north the word Asante is the linguistic equivalent of south and

is interpreted in a manner representative of this deeply historical and violent relationship between these populations.

When the British colonized Ghana in 1878, and declared their territory The Gold Coast, the northern regions were largely ignored. Colonial interests were in the south because this is where the commercial tree crops such as palm oil, rubber, and cocoa grew and these were the commodities that accelerated the growth of British export markets (Berry 1993). Access to the Guinea Coast for shipping only further facilitated the south's position, over that of the north, for being integral to the colonial economy.

It was not until 1902 that the north became a protectorate and was officially declared The Northern Territories, a designation that initiated British authority over the northern regions without formally integrating the region into colonial territory. However, colonial engagement in The Northern Territories was minimal if not superficial throughout the mid-twentieth century. Aided by reports from colonial ethnographers such as R.S. Rattray who described the north as a “flat monotony” inhabited by “primitive people,” the northern regions remained a protectorate of the Gold Coast (Rattray 1932). Such ethnographic inquiry, furthermore, helped the British understand systems of authority and rule in the north, information enabling the British to rule the protectorate to meet their own best interests (Kroger 2003).

While the Northern Territories were not officially incorporated into The Gold Coast, the populations of the north were still initiated into taxation policies that necessitated the need for income. Farmers in the north who wanted to expand their production to meet imposed taxes were limited by the lack of access to necessary capital (Sutton 1989). When such need could not be met through local agricultural productivity,

northerners went south to work on the burgeoning cocoa farms. One of the primary roles of chiefs who were targeted as indirect rulers was to mobilize labor reserves to the south.

The north, therefore, retained its status as a region where labor was extracted. Colonial authorities, however, marketed this movement of northern populations to the south as cyclical migration. Initially, because northerners only came for work in the south during seasons when labor on their own subsistence plots was not needed, it was easy for colonial authorities to insinuate that such seasonal mobility was intrinsic in traditional agronomic calendars. This was rationalized as the north's voluntary facilitation of the cocoa sector. It was argued by colonial officials that the movement of labor to the south was the cause of cocoa intensification and not the effect of the colonial political economy (Plange 1979: 11). Songsore (2001) and Plange (1979) argue that the north was intentionally under-developed because of this need for labor on cocoa farms.

As these migrations became more permanent rather than seasonal, the experience of the labor drainage did create significant alterations to the relations of production as the north was left deficient in young, male labor power. While women and elders compensated for the loss of labor, agricultural production throughout the region was hindered, and labor deficits often resulted in food deficits (Konings 1986; Lentz 2006), a pattern paralleling Audrey Richard's (1939) findings from colonial intervention in southern Africa. Such findings show how colonial policy substantially and deleteriously disrupted northern socio-economic relations to the detriment of food security.

With this disruption to the labor pool in the north, and the resulting food deficits, malnutrition additionally occurred in populations. In turn, malnutrition was used as mechanism by colonial authorities to explain why poverty persisted in the north. Much



like the colonial marketing of the “voluntary” migration of labor from the north to the south, colonial authorities described poverty in the north as the result of malnutrition and not the imposed need to migrate. Historical analysis of nutritional studies conducted in north-east Ghana however, asserts that undernourishment in the north must be acknowledged within the context of social and agro-ecological diversity in which such subsistence societies existed (Annegers 1973; Destombes 2006; Hunter 1967). These studies affirm that farmers in the region were not “too hungry to farm,” but rather were integrated into an economic system contextualized by seasonality, with buffers in place to prevent extreme changes in body composition. What challenged these buffers the most were colonial economic policies.

### **Conceptual Evolution of Food Insecurity and Food Insecurity Intervention in Northern Ghana**

Though hunger has always existed as a condition experienced by humanity, and has been demonstrated, was a feature of life in northern Ghana during the colonial era, the conceptualization of food security has a very particular institutional affiliation and history. Tracing this history and affiliation is relevant to understanding how food insecurity is interpreted as a problem and the solutions that are designed to fix it. The developmental origins of food security can be traced to pre-World War II efforts by the League of Nations to stimulate international dialog regarding food production, supply, and trade. At the time, there was interest in protecting producers and consumers from uncontrolled fluctuations in global agricultural production and prices as well as to responsibly handle the production of global food surpluses. However, it was not until the creation of the Food and Agricultural Organization (FAO) in 1943 that this geo-political dialog gained a foundation (Shaw 2007). In 1974 the World Food Conference was

organized by the United Nations to recognize the effects of recent famines and a surge in grain prices. It is here that the first definition of food security emerged as a condition reflective of availability of world food supplies (Pottier 1999: 11). The result of this meeting was a focus on global food production, trade, and stocks, an agenda well suited to the simultaneous rise of science and technology as the harbingers of a modern society.

During the years leading to and following World War II, The Gold Coast began to apply ideologies of modernization to the Northern Territories, especially regarding food production. Leading up to World War II, colonial officials began to address the need to become more self-sufficient in food production, an aspect of agricultural production that was sidelined during the development of the export market of the southern tree crop commodities (Shepherd 1981; Konings 1986). At this time, The Northern Territories were pinpointed for their capacity to cultivate grains. Enactment of the idea to increase grain production in the north was largely relegated to propaganda, however. Instead of any actual policies or programs that intended to facilitate more intensive production, colonial interaction involved encouraging farmers to expand production (Konings 1986: 170).

While this earliest interest in intensifying grain production in the north was framed as a way to increase food supply in The Gold Coast, food needs in the British metropole also began to motivate post-war agricultural agendas. The Gonja Development Project (GDP) emerged as one such concrete post-war agenda. The GDP was motivated by the United Kingdom's need for cooking oils and protein in the years immediately following World War II. Peanuts, a crop well suited to the semi-arid north, were deemed the appropriate crop to meet this demand and the project was justified by the belief that

the north could not sustain itself on subsistence farming (Nyantaki-Frimpong and Bezner-Kerr 2015b).

Not surprisingly, a strong focus on technology was outlined to facilitate this plan. Uniquely, though, collectivization was the system of economic organization advocated for enacting commercial peanut production (Grischow 2001). Some scholars suggest that the emphasis on collectivization was an intentional method for avoiding the destructive impact of privatized capitalistic development on smallholders, including their displacement from productive land (Grischow 2001: 287). As such, a marginal swath of land was chosen for the GDP and families from the densely populated northeast were encouraged to move to participate in the commercial groundnut cultivation.

As the GDP began, it became clear why land selected was not already actively cultivated. Much of the land could not be plowed due to its rocky structure, a feature that further caused machinery to fail. Furthermore, the cost of project salaries, infrastructure and inputs proved too much to sustain (Konings 1986: 251-52). Though this project represented a critical approach to maintaining local socio-economic relations, the moral overtones of the project did not hide how British colonial policy still directed how, when, and where local populations were able to integrate into in the economy.

The drive for agricultural collectivization in the north continued into the early years of independence. When The Gold Coast became the independent nation-state Ghana in 1957, the United Ghana Farmer's Cooperative (UGFC), a wing of President Nkrumah's Convention People's Party became the organizing entity of large-scale, mechanized agriculture for the nation (Shepherd 1981). The UGFC placed some focus on developing mixed farming projects in the northeast so as curb the growing regional

trend of food deficits. The south's growing food deficit, however, was the primary focus and the development of capital intensive, large-scale irrigation and mechanized rice projects that could meet the demand for food in the south earned the majority of the state's attention (Konings 1986: 162-63; Shepherd 1981).

Ghana continued to follow the trend in food security discourse of self-sufficient food production through the military regimes of the 1970s and initiatives titled "Operation Feed Yourself." Rice retained a status of preference for development due to a growing internal preference for the grain and the north's ecologically suited context for growing it (Shepherd 1981). While efforts in commercialized rice production did enable the employment of local farmers, local labor availability competed with the ongoing need to meet subsistence needs. Farmer ability to fully and most profitably engage in wage work was hindered by the simultaneous need to manage fields needed to feed the household (Shepherd 1981: 171).

Additionally, this initiative encouraged large-scale, mechanized production that required high levels of capital accessible to only a certain realm of elites. Initially, the state run Agricultural Development Bank (ADB) made loans indiscriminately, but competition from private banks forced the bank to adhere to lending procedures established by private banks (Shepherd 1981:174-75). The people with the ability to meet these credit guidelines were largely urban dwellers involved in some capacity of government bureaucracy. Given sliding wages and increasing food prices, the ability to become involved in the profitable rice industry grew in appeal with the educated, urban class and a system of absentee farming subsequently grew in the north (Goody 1980). Though the ADB continued to provide loans to small-scale farmers in the north, their

financial assistance did not provide the capital momentum for scaling-up production. Thus, alongside the first successful emergence of commercialized rice production in the north was the development of an unequal agrarian system (Shepherd 1981: 175). These efforts intensified already existing inequalities at even as they boosted internally produced foodstuffs (Goody 1980; Mendosa 1980).

As absentee farmers from the south continued to gain access to capital through their social standing, so too did they gain access to land when the process for land usage became one involving written documents rather than oral proceedings (Goody 1980). In the northeast where land was more constrained, this had detrimental impact. When the northeast was tapped as ideal land for intensive rice cultivation expansion happened quickly. This left the local small-scale producers with less access to land and less ability to successfully meet subsistence needs. When the rice that was produced in the region was moved for storage in a town in the northwest so as to meet urban food needs, northeast populations further lost access to purchasing the grains that were produced on their land (Shepherd 1981: 185). While this era of capital intensive agriculture is shown to have increased inequalities, recent oral histories suggests that it is a period retrospectively perceived to be more amenable to the small-scale farmer than the political economic climate that followed (Wiemers 2015).

These early initiatives in agricultural development in the north demonstrate alignment with the idea of food security at the time—that food security is achieved through increased food production. These initiatives also set an early precedent for food insecurity interventions as tied to national and global markets, leaving food insecure populations vulnerable to not only the inconsistencies of wage labor work in capital

heavy farming systems, but also to the prices of food in such markets. By the mid 1980s, however, there was a shift in how food insecurity was conceptualized as a problem. This shift was largely facilitated by Amartya Sen's theory of entitlements to food, rather than food availability, as the cause of food insecurity (Sen 1981). At the discursive level, instead of a focus on the nation state as the party responsible for managing a sufficient supply of food, emphasis shifted to food security as achieved through strategies employed at the household level (Carr 2006; Coates 2013; Maxwell 1996; Jarosz 2011). In this second wave of food security ideology, the FAO stated that all people at all times should have both physical and economic access to the basic food that they need (Pottier 1999: 12).

However, as this era simultaneously occurred with the major financial institutions' structural adjustment policies, the possibilities for enactment of this definition were constrained (Maxwell 2001). Jarosz (2011) finds that the World Bank's adoption of a household level oriented definition of food security actually enabled the institution to extend the structural adjustment agenda to programs for food security. Alongside other global actors, the World Bank advocated for commodity crop production as a solution to food security, an endeavor that not only integrated small-scale farmers into export markets, but also into markets for agricultural inputs (Pottier 1999). This agenda was further bolstered by a shift in instituting action against poverty rather than food security itself since commodity crops are intended to produce an income and not food necessarily for producer consumption (Maxwell 2001). This alignment of a newer food security definition to the principles of technology and the markets is demonstrable

of what Arturo Escobar refers to as the ability of development discourse to usurp certain new ideas and translate them to meet its own needs (Gardner and Lewis 2015: 6).

In northern Ghana, structural adjustment had profound effects on farmers and food security, derailing smallholder access to the technologies that had been increasingly promoted by external actors as the solution to their income (and thereby food) needs. With the transition into the structural adjustment era (1983-1988) the cost of agricultural inputs rose over 40% per annum in Ghana between 1986 and 1992. By 1990 the government eliminated guaranteed minimum prices for food crops such as maize and rice. By 1992 fertilizer subsidies were removed and fertilizer importation and marketing became privatized (Nyanteng and Seini 2000). In addition to being out-priced for inputs that had integrated into smallholder agricultural portfolios, the north did not benefit from the profits reaped by cocoa, timber and gold, commodities that the financial institutions had leveraged as primary focus for export markets (Songsore 2001; Yaro 2013).

As the Ghanaian government was charged with implementing the austere agricultural and economic policies of structural adjustment, a new space was created for the involvement of non-governmental organizations in developing the north into a food secure region. In 1986 this took the form of the Saskawa-Global 2000 initiative, a program run by an NGO that aimed to improve farmer yields through credit programs that granted accessibility to improved seeds and fertilizers. In its first three years of operation, the project expanded from 40 plots to 76,000 and yields were reported as increasing by as much as 40%. By the early 1990s, the project was suffering to recover loans and loans became harder to acquire through Saskawa-Global 2000. Once they were no longer in receipt of the loans for the expensive inputs, farmers reverted to local seeds

and traditional methods. In 2003 Saskawa-Global 2000 closed its operations in Ghana (Nyantakyi-Frimpong and Bezner Kerr 2015b).

What the structural adjustment era of food insecurity intervention in northern Ghana reveals is that even as food security evolved as concept in the 1980s, the measures taken to try and make northern Ghana food secure failed to similarly evolve or bring such security to the region. Large-scale institutions, furthermore, demonstrated their ability to direct how food insecurity, even as a product of entitlements, was a problem amenable by increased integration into global markets. Regardless of how the solutions to food insecurity failed to necessarily be compatible to the definition of food security, efforts to keep the concept theoretically malleable continued. At the 1996 World Food Summit, the FAO established a definition of food security that drew attention to food as a human right and away from emphasis on the scale by which food self-sufficiency should be achieved. This definition stated that:

Food security, at the individual, household, national, regional and global levels...exists when all people, at all times, have physical and economic access to sufficient, safe and nutrition food to met their dietary needs and food preferences for an active and health life... (cited in Pottier 1999: 13).

This is the first instance in the conceptual development of food security where the social and cultural merits of food were specifically declared, a transition that some scholars have declared a more postmodern acceptance of the complexities between food access and food security (Maxwell 1996). However, it was also acknowledged that the institutions guiding global food security goals were not prepared to deal with the social complexities of a postmodern acceptance of food preference as a tenet of food security (Maxwell 2001; Pottier 1999). Critics of the disconnect between the conceptual development of food security and food security governance also denote that development



and implementation of metrics often disrupted any progress in the theories that guided understanding of what food insecurity is, how it is caused, or how it is resolved (Clapp 2014; Jarosz 2011).

Such critiques are affirmed in analysis of the 2007/2008 global food crisis. In the immediate wake of the food crisis, the FAO declared that the number of undernourished people had increased by 150 million. However, in their *2012 State of Food Insecurity in the World* report, Lappé and colleagues (2013) point out that by narrowing what was considered to be hunger, the FAO revamped methodology to suggest that undernourishment peaked in 1990 and declined through 2006. In 2007 progress stalled, but did not reverse. Lappé and colleagues also point out this is not the first instance of revised food security metrics. Prior to these readjustments, the 1996 World Food Summit goal to cut the number of undernourished people globally by half was redefined as a Millennium Development Goal to cut in half the prevalence of undernourished people in developing regions. The effect of these cumulative redefinitions is that 220 million people who would have been considered food insecure were not so considered, thereby divorcing the global capitalist system that dictated prices of basic food commodities from increased rates of food insecurity in both the Global North and Global South.

In addition to inconsistent and malleable metrics employed to assess the effects of the 2007/2008 food crisis, establishing the cause of the food crisis became a turning point for food security discourse globally, but especially in Africa. It was argued by institutional actors that the food crisis was a failure of food availability rather than accessibility. Agriculture, a feature of economic development that had remained a relatively quiet player on the scene of large-scale development discourse throughout the

1990s gained prominence with this discursive reaction to the food crisis. While critical analysis of the 2008 food crisis underscored how increases in food commodities were not an issue of supply and demand, but rather a product of the volatility of the broader economic system, state and multilateral actors leveraged a claim that a lack of investment in African agriculture was a cause of concern for such future food crises (Clapp 2014; McMichael and Scheinder 2011).

Resulting from this assessment is a twenty-first century approach to food insecurity in Africa that is fast paced and involves overlapping constellations of public and private actors unified in their approach to advancing agriculture as the solution to food insecurity on the continent. The 2006 establishment the Alliance for a Green Revolution in Africa (AGRA) laid the foundation for this approach. Financed by the Bill and Melinda Gates Foundation, AGRA maintains an agenda to improve smallholder agricultural systems in Africa through enhanced productive capability leveraged through relationships between the public and private enterprise. In 2009, the World Bank assisted this agenda by releasing a policy report that called the Guinea savanna, an area encompassing one-third of Africa's landmass, a "sleeping giant."<sup>4</sup> Such branding was a rather direct appeal to the managers of global capital to invest in economically viable and untouched productive land.

By 2010 the United States Agency for International Aid (USAID) unveiled a strategic food security mission called Feed the Future (FtF). Though a global focus, with programs implemented in 19 countries, Africa is home to 12 of the FtF countries. FtF is committed to strengthening the relations between beneficiaries and the economic and

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<sup>4</sup>This report advocates for the commercialization of agriculture in this region based on comparison to successful ventures in similar ecological zones in Brazil and Thailand (Morris et al. 2009).

political structure they operate within. As described by Dr. Fenton Sands, Senior Policy Adviser for Feed the Future Ghana,<sup>5</sup> what makes FtF different from past USAID agricultural interventions in Ghana is the integrated focus on governing institutions and private investment. The program design in Ghana centers on the development of competitive value added chains for soy, rice, and maize. This is a process forecasted to boost incomes and subsequently improve the resiliency of vulnerable households and the nutritional status of women and children.

Strongly paralleling the efforts of FtF, but at an even larger scale, is the G8 New Alliance for Food Security and Nutrition. This is an initiative described by Dr. Sands as resulting from pressures by the United States, as the lead nation in the 2012 G8 Summit, for a stronger European front in agricultural development in Africa. Like FtF, the New Alliance employs a unified front of governments, private enterprise, and expanding markets as the platform by which to elevate agricultural production, and the solution to food insecurity and improved nutrition (McKeon 2014; Vercillo et al. 2015)

These successive and overlapping food security endeavors by entities external to African governing institutions, creates a narrative that has become the predominant script of internally driven politics and policies. Yaro (2013) identifies the Comprehensive Africa Agriculture Development Program (CAADP), a platform of the African Union, as molded by an ideology of food security through enhanced production. In 2001 and 2002 this took the form of government policies designed in collaboration with the World Bank to elevate Ghana to the status of an industrial agricultural actor (Yaro 2013). Under several different policy initiatives, the government has placed agricultural technologies as

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<sup>5</sup> In person interview with Dr. Fenton Sands at the Feed the Future office in the U.S. Embassy offices in Accra August 28, 2013

a high priority to meet a goal of doubling yields. Such initiatives include the Ghana Poverty Reduction Strategy (GPRS), the Food and Agriculture Sector Development Policy (FASDEP), and the Savannah Accelerated Development Authority (SADA). These strategies collectively strive to achieve accelerated growth through modernized agriculture as led by a competitive private sector and by integrating farmers into markets (Moseley et al. 2015; Vercillo et al. 2015).

One key informant identified that the shaping of national policy by this meta-narrative was everything that is wrong with Ghana's approach to food insecurity. As he noted in an interview,<sup>6</sup> "There is no policy in agriculture in this country. It is dictated by those who give us money." He furthered that the entities that give loans advise, and sometimes demand, the crops that should and should not be grown. Because there is no internally driven agricultural policy, he intimated that every election cycle in Ghana brings a different agricultural manifesto. The turn to creating different ministries for food and farming related issues was, in his opinion, only mirroring food security policy in more red-tape and bureaucracy. He suggested that what needed to happen in Ghana was an actual dialog between farmers and government and to cease the current trend for NGOs to speak for farmers.

Tracing this new Green Revolution in northern Ghana is difficult as it is challenging to know where on-the-ground project implementation is actually occurring. The artifacts of this renewed emphasis on developing the agricultural sector are prolific, however and demonstrate where the investment and accumulation of associated capital occurs as well as the power differentials involved. While I never saw any large billboards

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<sup>6</sup> Interview with ProNet employee and native to the Upper West at ProNet Offices in Wa, Upper West Ghana November 23, 2013.

for tractors in the Upper West, such billboards do line the major arteries in traffic laden Accra. The role of the private sector in this current era of agricultural development is also quite accessible. In one afternoon spent working in an airport hotel lobby in Accra in 2014 I overheard several agribusiness related conversations with such declarations as:

“We need fruit in abundance.”

“We’re not an NGO, we’re a business.”

“Herbicide and weedicide are the same thing, right?”

“An interpretation of cocoa that we are re-interpreting.”

Whether intentional or not, the fact that USAID chose March 6, the day that Ghana celebrates its independence from British colonial rule, as the day to unveil the second phase of a 70 million dollar leadership training project called Africa Lead<sup>7</sup> is also very indicative of how this new push for developing the agricultural sector is, perhaps, nothing new at all.

What one can see in the Upper West and throughout the north are signs denoting participation in various agricultural development programs. Decals for FtF are featured on 4x4 trucks spotted in both remote and urban settings. Just outside of Wa, a large concrete building described as a storage facility was proudly advertised as sponsored by USAID and FtF. In a texting exchange with a colleague conducting research in northern Ghana in 2015, she sent me a picture of a sign that announced that the president of the Peasant Farmer’s Association was participating in a field trial utilizing products in association with YARA, a fertilizer company.

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<sup>7</sup> Africa Lead is a program that works to support the FtF mission as well as the African Union’s Comprehensive Africa Agriculture Development Program by developing strategic relationships between African decision-makers, institutions and non-state actors including the private sector for agricultural productivity and food security.

Recent research from northern Ghana identifies that the technologies that are being promoted through FtF and related programs are technologies that are already available to farmers, just not necessarily accessible or preferred and therefore demonstrable of why such intervention is unlikely to work. In one recent study, high yielding, drought resistant maize seed were found to involve more labor and be less reliant than locally developed and sourced seeds. Worries over the cost of fertilizer associated with the high yielding potential of hybrid seeds was also expressed by farmers (Nyantakyi-Frimpong and Bezner Kerr 2015b). These are concerns that I also found in my own fieldwork. There are further indications that the current promotion of private enterprise to fuel agricultural development is leading to land grabs in the north (Yaro 2010) and that commercial agricultural operations are hindering women's livelihood opportunities (Tsikata and Yaro 2014).

Furthermore, in reviewing how past intensification efforts have failed to reduce food insecurity throughout the north, it does not bode well for the current efforts of these global actors. Reflecting upon his research on agriculture and health in Ghana's Upper East region in the late 1970s, Tripp (1981: 21) asserts:

Programs aimed at smallholder development, which would make farmers more productive and self-sufficient, would be welcomed by everyone. But planners must be forewarned that in viewing agricultural development as the most important means of improving nutrition, they overlook the fact that in many instances agriculture neither supports so-called 'subsistence cultivators', nor is it currently seen by them as the most desirable path for bettering their condition.

As summarized by Yaro's concerns about relying on what he terms an externally mal-articulated economy to create value chains in northern Ghana, "Agricultural value chains

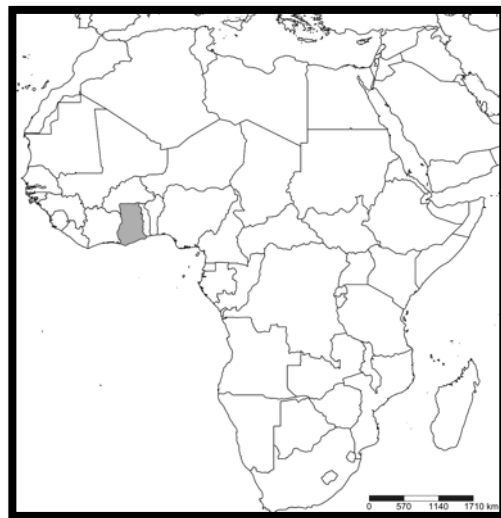
tend to link local producers to foreign markets, and can serve as conduits of exploitation and control without the right regulatory mechanisms which are non-existent in a regime of neoliberal globalization” (2013: 12). He concludes by emphasizing a need for development in northern Ghana to focus not just on agriculture, but on other sectors as well. He calls for the world of policy and practice to stop misreading the social and economic history of the region as they intervene in current social and economic relations. These social and economic relations will be explored in the following chapter so as to contextualize the two field sites as existing in a vulnerable economic and ecological context, but to also emphasize the actions taken to contend with life in such circumstances.

## **CHAPTER 4**

### **ETHNOGRAPHIC CONTEXT**

#### **Economic Organization in Upper West Ghana**

Ghana (Figure 4.1) is a country that has garnered substantial academic interest, particularly for its political and economic history. A significant amount of scholarship has been devoted to the development and history of the Asante State (see Allman 1993; McKaskie 1995; Wilks 1975). Scholarly interest has also focused on Kwame Nkrumah's role in leading Ghana as the first African nation to gain independence from colonial rule in 1957 and the socialist ideology that grounded his pursuit (see Biney 2011). The role of cocoa, one of the most prominent commodities in the national economy, has also intrigued scholars looking at social and agrarian change (Berry 1993; Hill 1963).



**Figure 4.1: Ghana situated in Africa**



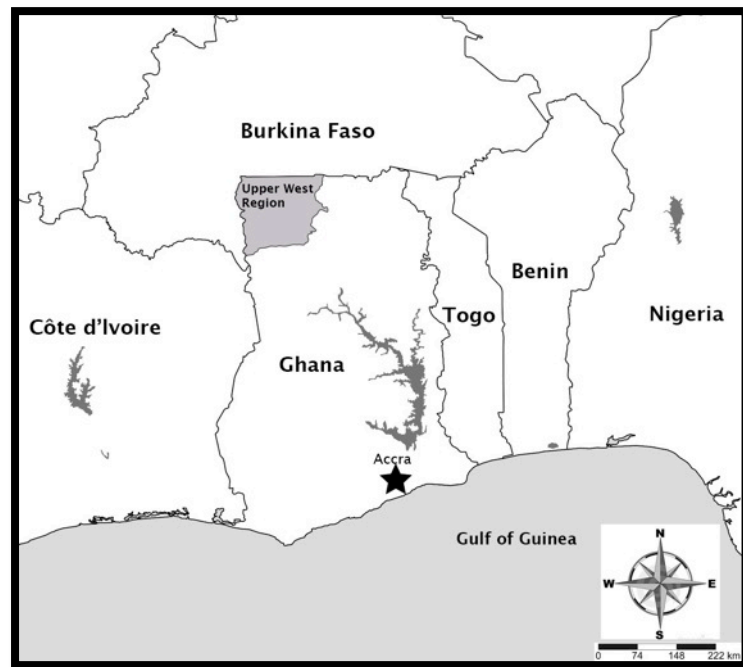
Ghana is separated into ten distinct administrative regions from which parliamentarians are elected and national policies regionally managed. The capital city, Accra, is located in the south, along the coast of The Gulf of Guinea. The country has a population of around 25 million people. Representing 48% of the population and concentrated largely in the central and coastal regions, the Akans are the most populous ethnic group and Twi the most commonly spoken indigenous language (GSS 2013).

While historical analysis of how colonization has differentially developed the northern and southern regions of Ghana is extensive (as was detailed in Chapter 3), particular focus on the social and economic ways of being in northern Ghana have been sparse. Early ethnographers of the north include Meyer Fortes, whose functionalist orientation led to the earliest field based research on how European contact affected social structures (Fortes 1936) and whose interest extended into issues of kinship and descent along with his student, Jack Goody (Fortes 1953; Goody 1962). Following the efforts of Goody and Fortes, anthropological engagement in northern Ghana has detailed the politics of ethnicity (Lentz 2006; 2013), the relationship between agricultural economies and population density (Cleveland 1980; Roncoli 1994; Devereaux 1993), the intricacies of household economy (Whitehead 1981; Whitehead 2002), the political economy of shea butter manufacturing (Chalfin 2004), and the effects of climate change on livelihoods (van der Geest 2004).

The Upper West Region, the setting of this project (Figure 4.2), is one of three regions located in the north, and the last region to be established in 1983. It shares an international boundary with Burkina Faso to the north and west. It shares national boundaries with the Upper East Region to the east and the Northern Region to the south.

The Upper West is composed of eleven administrative districts and, as of the 2010 census a population of 702,110 residents. At 18,746 square kilometers, the Upper West commands approximately 13% of the total land area of Ghana (GSS 2013).

The Upper West is semi-arid, with one rainy season occurring between May and September. The region straddles the Guinea savanna to the south and Sudan savanna to the north, in a position just south of the Sahel. Vegetation wise, this is a region of mixed forest and savanna landscape, with tall grasses and drought resistant trees. The rainy season has always demonstrated variability. Data from a regional weather station shows a mean annual rainfall of 1036 mm of rainfall between 1953 and 2011, with high inter-annual variability (Rademacher-Schulz et al. 2014).



**Figure 4.2: Map of Ghana and Upper West Region in West Africa**

Even with the historical trends in variable rainfall taken into account, the effects of climate change are documented in the region. The rainy season is both locally perceived and documented as starting later than in the recent past. Rains now typically start in May instead of April. Periods of drought are also documented as being more frequent and longer (Luginaah et al. 2009; Nyantakyi-Frimpong and Bezner-Kerr 2015a; van der Geest 2011). Seasonal migration to work on farms in the central Brong Ahafo Region is a common coping mechanism for men to deal with the lack of dry season farming in the Upper West as well as to provide income to purchase food to buffer against failed agricultural efforts (van der Geest 2011; Luginnah et al. 2009). Men also out migrate intra and inter regionally to find work in illegal small-scale gold mines.

### **Urbanizing Processes**

Wa, a small urban center located in the southwest corner of the Upper West is the regional capital. Wa is incorporated into the Wa Municipal District, a district with a population of 127,284 (GSS 2013). Wa is a Wale word that means “come” and this is a command that many young Ghanaians are following as they gain entrance into the University for Development Studies (UDS), the locus of urban growth. Founded in 1993, the Wa campus of UDS is one of three campuses in the north. UDS was specifically instituted to bridge the gap in educational access between the north and south. It is a baccalaureate granting institution that emphasizes curriculum on poverty reduction and community engagement. The most profound effect of the increase in a transitory population is an escalation in land prices due to the demand for rental housing. This is a trend that maps onto a wider regional pattern of transitioning from customary land tenure systems that allocate land for subsistence usage to private ownership (Yaro 2010). It is

estimated that the mean land values in the Wa Municipality increased by 60.6% between 2008 and 2010 (Boahmah 2013).

The surge in population of young people, and often young people from urban areas in the south, has led to a transformation of Wa from a sleepy frontier town and transit hub for goods going to and fro Burkina Faso, to a small city fueled by entrepreneurship and commerce to meet the needs and desires of a youthful population. There are distinct assumptions made about the Upper West by populations in the south, that to be transferred there for work or school is to be sent to a context with few amenities. It was not uncommon for people in Accra to question how I was managing in the Upper West given that it did not have to offer what Accra had to offer. However, though conversations with individuals from Accra or other urban areas of Ghana's south who have been living in Wa, it is recognized that what Wa does have to offer in comparison to Accra is extremely minimal traffic and the probability of cheaper goods and services.

Additionally, the city is adapting to consumerist demands. Small, enclosed shops with tiled floors, glass doors, and window air conditioning units that display new skinny jeans and high-heeled shoes are prominent signs of this change. So, too, are an increasing number of supermarkets, a categorization of food shopping very distinct from open-air markets. Many such supermarkets are equipped to not only sell packaged, perfumed rice from Thailand and a variety of trendy energy drinks, but also print receipts from computerized retail management systems. As I was concluding research, there was advertised promise of a restaurant that was going to serve pizza, perhaps the most telling sign of Wa's youthful urbanization, as pizza has emerged as a widely available fast food

in other Ghanaian cities. There were also rumors that the airstrip was going to be developed into a regional airport, ensuring that transit between Accra and Wa could be a one hour plane ride and not a 12 hour bus or car ride.

Despite the surge in enterprises marketing to a young population with expendable income, urbanization has not necessarily facilitated the same level of development in other service sectors. For example, the regional hospital, where the national insurance scheme is accepted, is under resourced and facilities not well maintained. Furthermore, only slightly more than 50% of the population in the Upper West has paid into the National Health Insurance Scheme even though the program was established as a pro-poor policy initiative (Dixon et al. 2014). Public resources related to sanitation, in the form of public toilets and piped water are also increasingly constrained as Wa expands.

As the regional capital, Wa also serves as the hub for a number of international and local actors working on issues of economic development, education, and health in the Upper West. The World Food Program (WFP) operates an office in Wa, opening in 2008. The agenda of the WFP, in partnership with the Ministry of Food and Agriculture, is to improve micronutrient consumption and income generation<sup>8</sup>. The Savanna Agricultural Research Institute (SARI) a national agricultural research center, conducts agronomic research on crops and farming systems relevant to the climate of the region. Numerous temporary projects affiliated with USAID and the European equivalents also use Wa as a place to establish an operational base. These organizational emblems are a common sight on project signs and project vehicles throughout the region.

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<sup>8</sup>As of 2013 the WFP was implementing a project at select sites that trained women to operate grinding mills with a vitamin fortified supplement to add to the cereal flour.

## **Social Organization and Household Economy**

The Upper West is composed of numerous ethnic groups. In and around Wa these ethnic groups are predominantly the Wale and the Dagaati. Both groups are categorized as belonging to the more encompassing Mole-Dagbani ethnonym. It is likely that the Dagaati are a sub-group of the Wale, a division that probably occurred as the Wale became an Islamic polity in the fifteenth century (Wilks 1989). The languages of the Dagaati (Dagaare) and Wale (Wale) are mutually intelligible and part of a dialect continuum. Traditional religious practices and beliefs are very similar and both groups retain traditional religious practices regardless of monotheistic religious affiliation. A common example of this kind of ongoing engagement with traditional religious beliefs is the painting of a symbol on the exterior of homes (Figure 4.3). This is viewed as a way to keep members of the household safe from ill will expressed by supernatural forces.



**Figure 4.3: Photo of traditional practice of home décor for spiritual protection**

Both the Wale and Dagaati are patrilineal and people identify as members of both a lineage and a clan. Affiliation with lineage usually merits stronger social and economic ties than affiliation with a clan (Lentz 2013; Wilks 1989). Polygyny is commonly practiced by both groups, regardless religious affiliation. As will be discussed later, patrilocality is a traditional, but waning practice.

The Wale remain a predominantly Muslim group settled largely in Wa and the surrounding communities (Wilks 1989). Though the Wale are now predominantly an urban population, they have historical ties to agriculture and Wale who live on the perimeter of Wa still actively practice small-scale farming. The Dagaati have historically been a largely mobile population. In the pre-European contact eras, mobility enabled autonomy from the regional empire states. In the contemporary era, because the Dagaati do not have land rights to the more productive lands in the region, mobility remains important as they search for fertile soils to support an agricultural economic base (Lentz 2013). The Dagaati were heavily influenced by the Catholic church in the early twentieth century, and Catholicism remains a strong religious affiliation for many Dagaati, even as evangelical Christian sects are becoming more predominant.

Rural life in the Upper West is organized by small communities that are categorized as either original settler communities or communities composed of “visiting” residents. These statuses reference customary tenure rights. Settlers have claims to customary tenure rights, whereas visitors do not. Tenure of land is held in the hands of local traditional authorities called *tendanas* (earth priests) who grant land access to household heads (men) in both settler and visitor communities. If lands remain in good use, the *tendana* grants ongoing usage through family lines and usufruct rights are

enacted. While the *tendana* oversees all issues tied to land usage, chiefs oversee matters of community social relations and development. Both of these traditional roles of authority are ascribed through lineage in a royal family line.

With their primary access to land, as well as command over labor, men are considered “the farmer” in this context (Naylor 1999; Whitehead 1981). In this role, men are responsible for acquiring the capital or labor necessary for the farming season. As the household head, men call upon the labor of their wives and children for farm activity. Additionally, it is a common practice for men to organize themselves into collective labor parties. Their physical contributions include preparing the land, weeding, and general management of the fields. This role leads to the responsibility of provisioning their households with enough cereal crops to last the household for the year. Ideally, enough staple cereal crops are harvested to satisfy family needs as well as to sell at market.

If enough crops are not grown or harvested, men are responsible for purchasing the cereals for the household. In terms of income earning, men are largely tied to selling their agricultural produce, trading in livestock, or selling their labor either locally or in a capacity that requires short-term migration. Men skilled in crafts such as carving wooden mortars or blacksmithing can also generate extra income, but work in such trades is relatively rare.

Women are expected to help with planting and harvesting their husband’s farms. Additionally, they are responsible for performing or managing the domestic economic activities including keeping the compound clean, fetching water and firewood, providing child-care, and cooking. In terms of food preparation, women are responsible for providing ingredients for the soups that accompany the staple cereal based porridge



called *tuo zafi*. These ingredients are cultivated in small gardens around the house, gathered from the bush, or, increasingly, purchased at market.

Women have access to a wide variety of activities by which to earn an income. Activities such as collecting firewood, manufacturing charcoal, and collecting and processing food items from the bush are ways that women can traditionally earn money to finance their soup obligation as well as any other household needs. The shea fruit, a non-cultivated forest product, from which shea butter is made is a predominant livelihood feature for women in this context. Women can either collect and sell the nuts whole, or process the nuts into shea butter for sale. Women are also the brewers of the local sorghum beer. Additionally, it is not uncommon for women to gain access to land through their husbands so that they may cultivate their own farms. Traditionally, Bambara beans are considered a woman's crop because as a crop they require minimal labor inputs. However, it is increasingly common for women to cultivate maize for household consumption and groundnuts for the market if they have the capital to hire labor or are involved in labor parties. It is also quite common for women to own their own livestock, usually small ruminants or fowls.

### **Field sites**

Chansa and Tampiani, the sites of study, are situated in the very western edge of the Wa Municipal district, closely bordering the Wa West district. This westward corridor of the district is one of increasing peri-urbanization resulting from the expansion of Wa. The communities immediately outside of Wa in this westward direction have already sold sizable portions of their productive land to developers wanting to build rental properties.

With the density of concrete block homes in progress along this corridor, there is a very strong visual representation of the effects of urbanization on the rural perimeter.

Despite the increasing peri-urban landscape, farming is and remains the predominant livelihood feature for both communities. As will be detailed later in the chapter, maize, millet, sorghum, cowpeas, and yam are important food crops for the communities. Groundnuts are the crop grown for almost exclusive sale. I present these two field sites in separate discussions to underscore differences in their socio-economic positioning. However, there are similarities that extend beyond participation in agriculture. Adults in both communities are largely without any formal education as the development of the public schooling system by the Ghanaian government was slow to emerge in the rural parts of the Upper West. Additionally, neither community has a health care facility, leaving both communities reliant on Wa as the closest source of biomedical health care. These services are sought depending upon household accessibility of the National Health Insurance Scheme. Traditional medicinal and healing practices are still commonly practiced in both communities. Individuals possess basic knowledge of local medicines and herbalists and traditional healers provide specialist knowledge.

Neither community has a market, but two market places are accessible. There is a weekly market in Wa as well as a weekly market in a community approximately five kilometers to the west called Vieri. Markets in the Upper West operate on a rotating basis. For example, if Wa market is on Monday one week, the following week it will operate on Tuesday. Markets are not only spaces for meeting resource or income need, but are important social spaces.

Chansa is located nine kilometers from the Wa city center along the main road that connects Wa and this peri-urban corridor to Weichau, the administrative center of the Wa West district. Though somewhat maintained by the regional roads commission, and reportedly much improved over the past ten years, this artery is not paved. Chansa is a Wale word that translates into “bright spot” and oral history indicates that the community was established in the early to mid-1800s by a Wale hunter. The oldest sections of Chansa (*Kunchiniyiri* and *Naayiri*) are composed of large, mud-brick compound houses that demonstrate both traditional architecture and traditional patri-local residential patterns (Figure 4.4). These homes have walls that have been plastered with local materials, but the roofs are almost ubiquitously zinc. The newer section (*Kampanyiri*) spreads eastward and contains smaller, neo-local households made with the same materials, but also concrete block homes in progress (Figure 4.5).



**Figures (from left): 4.4 Traditional Mud Brick and 4.5 Concrete Block Homes**

Chansa is composed of people who identify as Wale and Islam is the predominant religion. However, traditional belief practices are still upheld<sup>9</sup>. Younger generations are increasingly involved in evangelical Christian sects. There is a church in Chansa, but a large mosque serves as one of the most prominent buildings in the community. In addition to these religious buildings, Chansa has a primary school and a junior secondary school as well as a chief's palace. There are three small shops in operation, where community members can purchase widely used packaged goods such as soap and tinned tomatoes. Chansa obtained electricity around 2009 and has three boreholes that serve community members. With the arrival of electricity came three grinding mills where women may pay to have their maize, or other cereals, ground.

As descendants of the original settlers, the residents of Chansa claim customary rights to the land where they live and farm. Due to increased urbanization pressures from Wa, these land rights are currently contested by a neighboring community that has sold a majority of its land to developers. This community claims a settlement date prior to that of Chansa, a claim that under customary law would establish them as the land holders. Tension between Chansa and this community over land tenure was an ongoing theme throughout fieldwork. Physical confrontations between community members led to police patrols and the institution of a temporary evening curfew.

While residents of Chansa were concerned about their future land tenure, community members did not express any experience with losing rights to land during the research period. Community members indicated that maintaining good land usage via farming was a primary way to retain their land rights. Furthermore, people explained that

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<sup>9</sup>At the height of the Ebola epidemic in 2014, community leaders sought the assistance of a diviner to protect the community from the disease. Upon the death of the chief of Chansa, divination was again employed to uncover the cause of his death.

their aspirations to build concrete block homes were not only about the possibility to live in a non-traditional dwelling, but about building a structure that put a more permanent claim on the land than that of the traditional mud brick architecture. The community was raising money from all households to acquire the legal paperwork from the Lands Commission that would uphold their customary tenure rights.

With close proximity to Wa, residents of Chansa are integrating into the expanding Wa economy. While Wa has always been a site for marketing and administration, with the growth facilitated by the university, income-earning opportunities are more accessible for the populations on the perimeter. For women this involves trading in food items such as yams and rice as well as charcoal. Traders hire motor tri-cycles to haul goods that they purchase from individuals in Chansa as well as from other surrounding communities for sale in Wa. Trading can be a lucrative livelihood, but it involves obtaining and maintaining a high level of capital. For men, engagement in the new economy involves wage labor work in construction. This kind of work ranges from loading sand onto trucks to more skilled work in masonry. Men in Chansa are also finding employment as security guards at schools, banks, and wealthy residences in Wa.

Though frustrated that they are not able to receive the support from state or external actors for developing their community, community leaders in Chansa present a clear vision for the ongoing development of their long-standing settlement. Holding on to land is not only important for sustaining individual livelihoods, but also for the prosperity of the community. It is a goal to build a secondary school in Chansa so that the youth of Chansa will not have to live away from their families and so that the

community can develop its own jobs. A large parcel of land has been segregated from cultivation activities for this purpose.

Tampiani is located five kilometers from Chansa on a feeder road that heads north off of this main roadway. The road that connects Tampiani to Chansa is not regularly maintained and public transit cars do not pass through Tampiani. This leaves Tampiani residents reliant on their own means of getting to local weekly markets as well as Wa. Most households are reliant on bicycles or walking.

The inhabitants of Tampiani identify as Dagaati and are considered visiting settlers with ties to homelands further to the northwest. Oral histories indicate that the original settlers of this community traveled to the region approximately 70 years ago in search of more fertile lands. Chansa grants Tampiani access to the land for settlement and farming. Tampiani has their own local leaders, but ultimate authority regarding land usage or resolution of disputes is under the authority of the chief or *tendana* in Chansa.

Despite being located only five kilometers away from Chansa, Tampiani is still without electricity. A sign located on the outskirts of Tampiani reads “No lights, no vote,” indicating a waning tolerance for this ongoing and very political disconnection from the national electricity grid. There is one borehole located centrally in the community. There is one grinding mill in Tampiani that is run by a fuel-sourced generator. Access to packaged goods is more minimal, with one or two households selling a few items like soap out of their homes, unlike the stand-alone shops that exist in Chansa. Other than the primary school, there are no distinct communal or collective buildings, though a church was in the process of being built at the end of 2014. This is reflective of the community’s increasing adherence to Christianity. Traditional belief

systems also remain quite strong in Tampiani, independent of or in combination with Christianity.

Traditional mud-brick architecture with plastered walls is the norm in Tampiani. These are extended household compounds. While most compound houses have at least partial zinc roofing, instead of only mud or thatch, only one or two households have expanded into building concrete block homes. Residencies in Tampiani are much more spread out, affording most households the ability to farm around their homes in addition to their farms in the bush.

Though households in Tampiani sell and buy things at the Wa market, engagement in the newer income earning opportunities afforded by the Wa economy is more minimal. Women in Tampiani are not engaged in trading. Rather they are suppliers of goods for the traders in Chansa, especially charcoal, because they do not have the collective capital to hire their own motor tri-cycles for selling directly at the Wa market. Men in Tampiani are not engaging in construction work, but interest in security work is increasing. One man declared that this lack of involvement in the formal economy in Wa was the result of an ethos maintained in Tampiani to “put humanity before money.” He indicated that in Tampiani collective good works such as helping repair homes during the dry season or collective labor during the farming season was perceived as more valuable than cash.

While relations between the residents of Chansa and Tampiani are good, and authorities in Chansa never provided any indication that they would deny the residents of Tampiani the right to continue to settle and farm on their land, the current pressures on land calls into question the future stability of Tampiani as a community. As visitors to

the region, the Dagaatis of Tampiani seem to be at a disadvantage when it comes to the opportunities of the expanding capitalistic system because of their lack of control over the means of production.

### **Agricultural Practice**

Diet in Chansa and Tampiani is tied to subsistence level agricultural practice. The way food is produced has been modified as a result of increased market integration and changing agro-ecological conditions. Farmers in Chansa and Tampiani are cultivating between five and 15 acres. Farmers in Chansa only grow on plots away from the homestead. Farmers in Tampiani cultivate on plots both away from and surrounding the homestead. Shifting cultivation is practiced and crops are grown in both upland and lowland fields that are rotated according to farmer preference and knowledge of growing conditions. Farmers in these communities indicate that they are not able to shift their farms as often because land is not nearly as plentiful as it once was. Mixed cropping in the form of intercropping or relay cropping does occur to a certain extent, but oral history indicates that perhaps this was more of a practice in the past than it is now.

Farmers in Chansa and Tampiani describe the lands that they farm as having sandy and loamy soils and they widely uphold that soil conditions are diminishing in quality. Local NGO workers suggest that farming is more difficult in the districts west of Wa because they are more deforested than districts further north and east, and deforestation has influenced both the soil quality and water cycle. Farmers affirm this and try to ensure that trees remain in their fields so that they help with erosion as well as nutrient cycling. Deforestation in these districts results from limited income earning opportunities and demand for charcoal in the Wa marketplace. Rural communities instill



rules about how landscapes should be managed for charcoal need. For example, there is a rule that the shea tree (*Vitellaria paradoxa*), because of its economic importance in the production of shea butter (Figure 4.6), should not be cut for either firewood or charcoal<sup>10</sup> (Figure 4.7).



**Figures (from left): 4.6 Shea fruit before processing and 4.7 Charcoal for sale**

Farmers in these communities readily identify that the rainfall patterns are changing. However, their comprehension of the global processes that are causing these changes are not so readily understood. There is a local discourse that rainfall patterns are changing because of the localized cutting of trees. This is a pattern of self-blame that other researchers in the Upper West have also found (Eguavoen and Schraven 2013). People in Tampiani and Chansa speak of the “false start” of the rainy season, a phenomenon that challenges local knowledge about when to start planting crops. More frequent periods of drought are also identified by farmers. What is especially clear in conversations with both men and women in both communities, and a factor that will be

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<sup>10</sup> This is a taboo that is taken very seriously. The death of one of the participants in this research was blamed on breaking this taboo. She was bitten by a snake in the process of cutting limbs from a shea tree and people explained the snake’s actions, and her resulting death, as the bidding of the earth god.

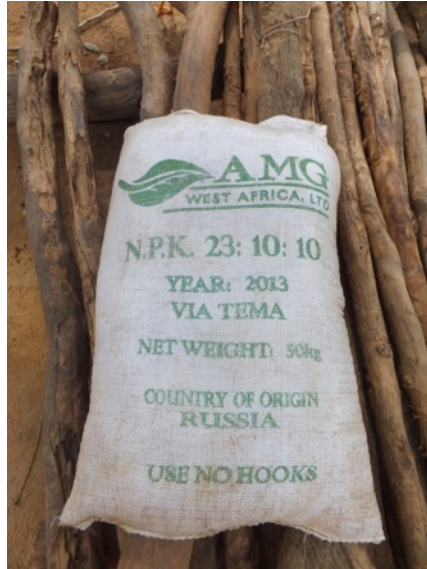
discussed more in Chapter 5, is that households are cultivating more acres to meet the goal of household food security. This is not described as a feature of increased population size, but rather of the challenging soil and rainfall conditions. There is an association of the past as a time in which minimal land could be cultivated for an amount of food that would sustain the household throughout the year.

Cultivation largely involves manual labor for plowing, sowing, and harvesting. Depending upon accessibility of capital, most farmers strive to purchase some combination of inputs in the form of chemicals (fertilizers, pesticides and weedicides), renting tractor service, and labor. Though households in these communities are largely independently farming, collective labor parties are formed to help meet the need for this input and to eliminate the need to hire labor. Involvement in collective farming groups is more common in Tampiani than in Chansa<sup>11</sup>.

Based upon data on agricultural participation collected in the primary field season, in 2014 it cost on average 70 GHS (approximately \$19) to plow or till 1 acre of land with a tractor. Bags of NPK fertilizer averaged 90 GHS (approximately \$24) (Figure 4.8). The median amount spent per farmer on all inputs (inclusive of men and women independently farming) in Chansa in 2014 was 324 GHS (\$85). In Tampiani the median amount spent per farmer (inclusive of men and women independently farming) in 2014 was 118 GHS (\$31). In relation to income earning opportunities, these are significant amounts of money. With the high cost of inputs, individuals from Wa with access to capital will operate informal lending schemes. They will provide inputs up front with return expected in the form of a certain amount of the harvest or re-payment in full.

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<sup>11</sup>Even informal reciprocal relations show signs of dissolution in Chansa. One man relayed a story of how he was surprised to be given money by a friend at the end of a day of helping him on his farm.



**Figure 4.8: Bag of chemical fertilizer**

In these communities sorghum (*Sorghum bicolor*), Pearl millet (*Penisetum americanum*), and maize (*Zea mays*) are the staple grains. Sorghum (*gia*) and millet (*kagia*) are indigenous grains and exist in early and late maturing varieties. They are referred to interchangeably as *chi*. Since the mid-twentieth century maize has grown in popularity as crop grown in the Upper West for consumption and is prioritized as much as, or more so, than sorghum or millet. The reasons for the shift to an emphasis on maize are complex, but a commonly expressed reason for this shift is that maize matures faster than either sorghum or millet<sup>12</sup>. The faster maturity time is likely a feature appreciated for both reasons of getting food into the household sooner, as well as dealing with a rainy season that is identified as becoming shorter in duration. There are varieties of maize that are considered locally bred as well as varieties that are sourced from seed companies.

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<sup>12</sup>The most entertaining demonstration of this preferred quality of maize occurred when a woman described her twin teenage children through a metaphor of local crops. She described the young woman, who had grown quite taller than her twin brother, as maize, leading to the inevitable comparison of the young man to the more slowly maturing sorghum or millet.

Local yam (*Dioscorea spp.*) varieties are cultivated in mounds. Indigenous varieties of cowpeas (*Vigna unguiculata*) and Bambara beans (*Vigna subterranea*) are also part of the local agricultural portfolio. Earliest ethnography from the region documents that planting all of these crops, including early and late maturing millet varieties, is important for buffering food shortfalls (Fortes and Fortes 1936).

Groundnuts (*Arachis hypogaea*) are the most commonly grown cash crop. Much like maize, there are two main varieties of groundnuts, one considered a local cultivar and one acknowledged as originating in China. Rice (*Oryza sativa*) and soy (*Glycine max*) are also crops present in the region, but to a lesser extent. Soy is not widely consumed and is viewed as a risky crop to grow for both agricultural and market reasons<sup>13</sup>. The environmental requirements of rice make it challenging to grow on a large scale. Tomatoes (*Lycopersicon esculentum*), okra (*Abelmoschus esculentus*), peppers (*Capsicum spp.*), and pumpkin leaves (*Cucurbita spp.*) are horticultural crops also commonly grown either for sale or for household consumption.

### **Dietary Practice**

The staple food in the Upper West is *tuo zafi*, a stiff grain based porridge (Figures 4.9 and 4.10). Traditionally, *tuo zafi* is made from sorghum or millet flour. Maize flour, however, is increasingly used. Currently, the region is undergoing a transition in which middle-aged adults remember eating *tuo zafi* made with these indigenous grains, but their

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<sup>13</sup>Soy is currently being promoted by agricultural development projects, especially as a crop for women to grow. I visited such a project site in November 2013 with local NGO fieldworkers facilitating the project. We talked with one woman who had chosen to grow a drought resistance variety, but still ran into problems with the plant becoming too dry before the beans were harvested. Because the plant was drying out, the beans started bursting out of the pods as the plants got too dry. Her solution was to harvest the entire plants and to place all of the plants in piles so that as the beans kept emerging from the pods, they would congregate in one spot. Despite her management of the situation, she was chastised by the NGO workers for exposing the soybeans to dirt and gravel as such impurities are not tolerated by the commodity chains soybeans are being funneled into throughout northern Ghana.

children are now rarely exposed, and when they are exposed, are described as displeased with the red color of the sorghum flour. *Tuo zafi* is always eaten with a soup composed of some mixture of fat, protein, and vegetables.



**Figures (from left) 4.9 Prepared *tuo zafi* and 4.10 *Tuo zafi* in preparation**

Traditionally, the fat used for soups is locally procured and manufactured shea butter (*Vitellaria paradoxa*). Protein is added through another wildy sourced and manufactured ingredient called by its Hausa name *dawa-dawa* (*Parkia biglobosa*), a fermented paste made from the beans of a wild fruit. Protein is also added through fresh or dried meat or fish. Vegetables commonly used include both wildy sourced greens from trees and plants as well as cultivated vegetables such as tomatoes, okra, and pumpkin leaves. Seasonings to the soup vary greatly by household and preference. Flavor similar to ginger is mimicked in a local spice known as *simandobile* that is reported to hold many medicinal properties, especially for women who have recently given birth. The flowers from the *biri* plant are valued for the sour taste they add to groundnut soup. The most ubiquitous ingredient for flavor is some form of fresh or dried red pepper.

Soups eaten today still follow this basic structure, but the kinds of ingredients used as well as how they are sourced is changing. There is an increased desire to use imported vegetable oil or palm oil from southern Ghana, as both of these forms are viewed as markers of being a contemporary consumer and eater<sup>14</sup>. *Dawa-dawa* is a complicated contemporary ingredient (Figure 4.11). Whereas younger women declare that they prefer the taste that packaged bullion cubes add to soups, they still recognize the healthful contributions of *dawa-dawa* to soup. Its relevance as a source of protein is perhaps bolstered as households are less able to source wild meats and fish or afford meat based protein from the market. There is an increased connotation with using certain vegetables from the wild as a sign of being too traditional or “backwards,” but greens either from the wild or from the market are regularly used. Fresh tomatoes are valued, but imported tinned tomato paste concentrate is often less expensive.



**Figures (from left) 4.11 *Dawa-dawa* and 4.12 *Saalong***

Okra is valued as a vegetable, but also for its property of being what is locally referred to as slippery. Soups that accompany *tuo zafi* are expected to be slippery

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<sup>14</sup>In cooking with a friend in Wa, I learned that another preferred reason for using vegetable oil is that it enables soups to remain in servable form because, unlike shea butter, it is a fat that does not solidify upon cooling. This is important to note because it references the relevance of the aesthetics of food in shaping decisions about dietary practice.

because such an aesthetic quality is seen as better enabling the local eating practice of swallowing, without masticating the staple porridges. Okra is used fresh or dried. The last fruits from the okra plants are harvested in their early stages of development and dried for using in the dry season. The dried form still produces the desired slipperiness. Other plants can also produce this desired aesthetic effect. *Saalong* is one such plant that grows wildly and is gathered during the rainy season and used fresh as well as dried for consumption during the dry season (Figure 4.12).

Yam is another staple carbohydrate widely consumed. Yam can be eaten whole in a steamed form, or steamed and then pounded. Pounded yam (*kapala*) is another meal consumed with a soup. However, soups that accompany *kapala* can be, but do not have to be, slippery since *kapala* has a smoother texture than the grainier *tuo zafi*. Soups preferred for *kapala* are groundnut and a tomato-based soup referred to as “light” soup. Rice can be eaten with a tomato-based stew or in combination with cowpeas. Cowpeas are eaten in their whole form and may also be ground into flour to produce steamed bean or fried bean cakes. The name of one variety of cowpea, *omandao*, translates into “beans so sweet you will leave your husband,” demonstrating an interesting co-construction of taste and variety (Figure 4.14). Bambara beans are eaten whole and boiled or in a dried form (Figure 4.13). The local word for Bambara beans, *simbie*, translates into “feed the children,” another indication of how local foods are valued in dietary practice. Children will often have dried *simbie* in their pockets for snacking on.

Though the indigenous grains sorghum and millet have lost their prominence as an ingredient in *tuo zafi*, they remain important for other products (Figure 4.15). Millet is used to make a thin, sour porridge that is consumed in the morning or as an afternoon



snack. Sorghum is still used in the preparation of a local beer referred to by its Hausa name *pito* (4.16). *Pito* is viewed as a valuable source of nutrition by both traditional and bio-medical health care. *Pito* is also valued for its role for facilitating sociality and plays a symbolic role in funerals and other celebrations.



**Figures (from left) 4.13 Bambara beans and 4.14 *Omondao* cowpea variety**



**Figures (from left) 4.15 Sorghum background and millet foreground and 4.16 *Pito***



Consuming three meals a day is considered desirable and typical for the region. Meals are cooked in kitchens located in the open space of household courtyards. In these communities firewood rather than charcoal is still predominantly used. Most kitchens are equipped with a wooden mortar used for processing grains as well as pounding steamed yam, a variety of steel cooking pots, wooden spoons that are locally crafted, and a grinding stone for processing tomatoes, spices, and peppers. Having a particular style of enamel bowls for serving food to your guests is of cultural importance. Meals are eaten communally, with one large bowl of the staple food and one smaller bowl of soup being distributed to groups of the household that eat together. Men who are the household head typically eat by themselves, but may invite their peers or elder male children to eat with them. Women eat with their peers and young children.

## **Conclusion**

This ethnographic overview has focused on elements of geography and economy that are important to understanding how these two neighboring villages are both similar and different. I have emphasized the urban growth of Wa (the regional capital) to underscore how the residents of Tampiani and Chansa are living in an area that is increasingly more peri-urban than it is rural. Both populations remain reliant on agriculture as the primary livelihood feature, but there are differences in how livelihoods are diversified via integration into Wa's expanding economy.

The residents of Chansa are more involved in the economic opportunities afforded by the economic growth that accompanies Wa's increased population. This is perhaps owing to ethnic identity. As Wa is populated by Wale people, it is possible that the Wale residents of Chansa are more socially networked into job opportunities. This

difference could also be explained by evidence that residents in Tampiani remain more aligned with the moral economy of their community (such as collective farming groups) than they are interested in acquiring waged jobs. Despite differences in ethnic identity and formal economic engagement, both villages farm the same kinds of crops and eat similar diets. There is, additionally, a shared perception of the existence of wide-spread poverty and food insecurity in both villages. The similarities and differences in the experience of food insecurity between these two villages will be explored in the next chapter.

## CHAPTER 5

### **“EVERY DAY IT’S *STUO ZAFI*”: DETAILING CONDITIONAL AND EXPERIENTIAL FOOD INSECURITY IN UPPER WEST GHANA<sup>15</sup>**

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<sup>15</sup> Ham, Jessica. To be submitted to *Food Security*.

## **Abstract**

The prevailing discourse on food insecurity in Africa is one dominated by discussions of causality (i.e. failed agriculture) and outcomes (i.e. malnutrition). Inquiries into how food insecure populations actually manage their constrained food lives, as well as relate to those food lives are largely missing. In this chapter I build from the work of scholars challenging studies of food and health to find and use measurements and methods that seek out and coalesce with the localized understandings of food and health.

This body of research encourages more detailed consideration of how people relate to their diets. Utilizing data from field notes, interviews, and surveys collected in Chansa and Tampiani, I explore contextual notions of taste alongside dietary diversity, nutritional indicators, and standardized food insecurity measurements to holistically consider how food insecurity is caused relative to a context of political ecology and economy and how it is experienced relative to notions of satisfaction with diet. I argue that while survey scores between two communities reveal that food insecurity is a variable condition, other methods focused on a localized context of everyday acts of eating can produce results that tell different, yet symbiotic stories about a disconnect between how food is perceived to structure well being and how it is actually utilized.

## Introduction

In Ghana's Upper West, the cereal based porridge *tuo zafi* (TZ) is a cultural cornerstone dish, the import of which is documented by ethnographers Meyer and Sonia Fortes' 1936 description of a man who, upon learning that the diet in the United Kingdom does not entail TZ, responds that such a diet sounds like starvation (Fortes and Fortes 1936: 265). Similar declarations exist contemporarily as well. My field notes from the same region detail sayings such as "One has not truly eaten until one has eaten TZ."

Yet, during the months between April and August 2014, when I asked people to recall what they had eaten the day prior, "Every day it's *tuo zafi*" was inevitably the preemptive remark relayed. This was a line delivered with a tone of exasperation, if not despondency. Similar to the ethnographic experience of Elizabeth Finnis (2008) in India, this was also a question that resulted in confusion from interlocutors who wanted to know why, after repeated efforts, I could not just intuit that they ate the same thing everyday. Set against my concerns with looking at the relationship between food insecurity and mental health, the tone of this phrase alerted me to a dietary pathos—it alerted me to the fact that meal-to-meal engagement with this culturally salient dish was not pleasurable.

Simultaneous to navigating the tension between a beloved food and a threshold of tolerance for it, by actually cooking and eating with people I was further challenged to consider how dietary diversity could be defined beyond the nutritional or material composition of food. In my evenings dining with my host family, commentary on the quality of the food was nuanced and detailed. Rarely did I possess the sensory capabilities to participate, blinded as I was by my own North American appetite for a diverse diet I not only defined by consuming different combinations of cereals, legumes,

and vegetables, but by the capability to engage in different culinary experiences. Every evening I reluctantly willed my appetite to get on good terms with yet another meal of TZ and okra soup while simultaneously dreaming of the pizza and Thai food that could be had in Accra, a long 12 hour bus ride away.

Though I learned to tease my young friend that there was not enough red pepper in the soup, a jesting insult in this context, I never knew when to tease her older sisters for their preparation of TZ that did not achieve the household's preferred soft texture. Neither did I know how to reply to the post-meal questioning of my research assistants who always eagerly sought my opinion on how soft the *kapala* (pounded yam) was. They were adept at feeling any difference in weight and texture of pounded yam not only in their hands, but also in how the food sat in their body. The capacity of a particular yam variety to attain their desired softness was so appealing that they bought seedlings from the sourcing farmer to cultivate on their family farm.

These observations provided very telling information about how repetitive eating affected people's sense of satisfaction as well as how the aesthetic or sensual qualities of food shaped notions of dietary diversity. It became clear that to exclude consideration of these attributes of dietary structure could exclude a holistic examination of what it meant to be food secure in this particular Ghanaian context. Yet the nuance of the information provided by these observations was not captured in my seasonal implementation of a food security survey instrument that directed most of its questions to quantity of food available in the household. This encouraged me to place more impromptu emphasis on dietary recall surveys and interviews that could situate food security through inclusive and contextual parameters.

I am far from alone in working through the limitations of food insecurity as a measurable condition. While an applied nutritionist and agricultural economist are amongst the researchers who have recently written about their discontent with the inability of metrics to capture the holistic experience that we understand food insecurity to be in the twenty-first century, their solutions to this disjuncture hint at revised survey methodology (Coates 2013; Hendriks 2015). Carly Nichols (2015: 183) asserts that while developing such standardized methods may be critical to readily identifying food insecure populations for intervention, she is skeptical as to if the programs that result actually meet the specified goal of helping people to meet dietary needs that are in accordance with their food preferences.

Social scientists from diverse disciplines unite with Nichols' concern and are advocating for a need to document not just *if* people are eating or *how* much, but their *relationship* to what they are or are not eating. This approach directs researchers to a more subjective nexus, where relations between bodies food are articulated (Carney 2014; Cousins 2016; Hayes-Conroy and Sweet 2014; Huhn 2013; Nichols 2015; Noack and Powu 2015). In taking up Coates' (2013: 1) call to deconstruct food insecurity into constituent parts, I advocate for more systematic and truly subjective evaluations of food insecurity as an experience alongside the systematic quantitative and more objective evaluations of food insecurity as a condition. I position the anthropological tool kit as necessarily and inherently equipped for the task.

In what follows, I review how anthropologists address food security, underscoring a split between those who address it as an objective condition and those who address it as a subjective experience. Then, I draw from mixed methods data to show how both of

these approaches tell particular and theoretically important stories about food insecurity in Upper West Ghana. In particular I draw from seasonal standardized survey scores and anthropometrics to show how these metrics suggest that food insecurity is a variable condition between two neighboring communities. I then use actual consumptive patterns and ethnographic insight into food preference and dietary change to show how people's relationship to diet suggests that food security is not experienced in either community.

I contextualize these results in a discussion that argues that because surveys and anthropometrics do not present a picture of what people are actually eating, or how they relate to that eating experience, they limit analysis to certain, easily quantifiable dimensions of food security related to how food is accessed and the amount of food consumed. This overlooks the subjective experience with food, a perspective that is deeply connected to local foodways and further associated with contextually relevant conceptualizations of how health is achieved through food. Such perspective is not only merited for scholarly interest in food systems, but is necessary for enabling a rights based approach to food security that can counter the global governance that continues to define food insecurity as a problem and construct the responses to it (Jarosz 2011: 218).

### **Anthropological Approaches to Food Insecurity**

The bio-cultural anthropological approach has been and remains a valuable contribution to food insecurity studies because of a diverse methodological and analytical tool kit that enables connecting causes of food insecurity to its effects on health. This began before food insecurity emerged as a theorized concept in the 1970s. Audrey Richards' pioneering work with the Bemba in the 1930s established that poor nutrition was not reflective of an inefficient African system of farming or diet or diet, but was



rather a product of colonial taxation policies that disrupted local agricultural economies (Richards 1939). Since then, research in this vein has found that food accessibility, or entitlements to food, creates variability in nutritional indicators, through socio-economic advantage rather than skills or knowledge in subsistence practice (Crooks et al. 2007; Graham 2004; Leatherman 2005) or integration into commodity cropping (Dewey 1981; Fleuret and Fleuret 1980).

While it is important to continue to show how food insecurity results in poor nutritional outcomes, reliance on anthropometrics or standardized surveys to determine who is food insecure undermines the conceptual strength of food insecurity as a heuristic. Widely used surveys are structured around availability of, access to and utilization of food, the three pillars considered to contribute to food security. In such surveys, there is little consideration of whether the foods that are available, accessed, and utilized are done so contentedly. For example, in the Household Food Insecurity Access Scale, minor attention is given to the metric of “preferred foods,” but without a deep understanding of what “preferred foods” might mean in any given context, the likelihood that three questions in an eight question survey captures the affective experience of dietary circumstances is quite minimal (Coates et al. 2006). Without deeper ethnographic integration into any particular context of food insecurity, it is not likely that binary “yes/no” responses to such questions encompasses how food is implicated in articulating symbolic, sensuous, psychological and social meaning (Holtzman 2009: 9).

Increasingly, bio-cultural anthropologists are considering the social role of food (Wutich and Brewis 2014). For example, Weaver and colleagues (2014), acknowledge that food is imbued with social norms such as prestige, and test to see if variance in the

consumption of foods contextually denoted as having low or high prestige results in different mental health outcomes. While they do not find a strong association, their effort to direct attention to how *what* we eat is just as important to our psychological sense of well being as *if* we eat is important to recognize.

Instead of relying on quantifiable metrics, critical medical anthropologists and geographers place the subjective body as the central point of analysis. Nancy Scheper-Hughes' ethnographic exploration of hunger in Brazil remains one of the most theoretically enriching examples of how people relate to the food that is available and accessible. For example, in this Brazilian context people categorize foods that are considered nourishing and satisfactory as “real foods” as opposed to the “foods to fool hunger” that compose their actual daily diet (Scheper-Hughes 1992: 159).

Studies aligned with this subjective approach to food and the body continue to show that even when populations have access to food, dissatisfaction with diet and resulting health outcomes can occur. Research from India demonstrates how a rural population transitioning from the subsistence production of millet to commodity production of cassava assesses their new diet reliant on purchased rice to be financially necessary, but dissatisfying (Finnis 2008). Similarly, In Kenya, the transition from sorghum to cheaper maize flour is a dietary trend that occurs simultaneous to perceptions of sorghum flour as being better for the body as well as more satisfying (Noack and Powu 2015).

Taste, too, emerges as an important conduit for food and health. Several recent studies have found that women who migrate from rural to urban centers are dissatisfied with the attributes of industrialized food in terms of taste and the neutral or negative

contribution of these new foods to health (Carney 2015; Hayes-Conroy and Sweet 2014). In Mozambique, Huhn (2013) finds that the embodiment of food's healthful merits depends not on the particular attributes of the material food item, but rather the context of the eating, largely the affective state of the eater. She finds that emotional distress negates the quality of a food item and that food cannot taste good or positively contribute to the body when consumed out of necessity or when the eater is feeling marginalized. Huhn encourages future researchers to seek out alternative eating objectives, asserting that:

Alternative objectives in eating need not, of course, negate or even conflict with biological imperative. But they should be recognized, where applicable, as a distinct and veritable contribution to local foodways, which can be symbolically rich even where people are poor, complex even where culinary fare is unelaborated, and dynamic even where cuisine is rote (206).

### **Subsistence, Diet, and Nutrition in Upper West Ghana**

To consider the differences found between these objective and subjective considerations of food insecurity, this study compares results from two neighboring communities in the Upper West Region of Ghana. These communities are located in a semi-arid ecological context straddling the Sudan and Guinea savanna zones, a region with a long trajectory of ecologically oriented studies of subsistence, food, and health. Early research from this context focused on how subsistence populations adapted to the risk of nutritional constraints posed by a semi-arid climate and variable rainy season. One trajectory situates variability in nutritional outcomes as a product of ecological and social diversity that instituted different social and behavioral buffering mechanisms for such a risky subsistence context (Annegers 1973; Destombes 2005; Hunter 1967; Tripp 1981). Another trajectory identifies seasonal fluctuations in physical activity levels and

energy expenditure associated with the farming season as features implicated in changes in body composition (Brun et al. 1981; Fox 1953; Higgins and Alderman 1997). By the 21<sup>st</sup> century, focus shifted to the predominant food security paradigm. Research from social scientists and surveys from the World Food Programme establishes food insecurity as a prolific problem throughout northern Ghana (Biederlack and Rivers 2009; Hesselberg and Yaro 2006; Quaye 2008). A 2012 World Food Programme report indicates that there is a strong degree of regional variability in what is causing food insecurity as well as the severity of the experience of food insecurity (Hjelm and Dasori 2013).

Though the two neighboring villages that serve as the sites of this study reside along a peri-urban corridor, subsistence agriculture is the primary economic activity. Cultivation depends on one rainy season that begins April/May and extends through August/September. Mixed crop farming of grains (maize, millet, sorghum), legumes (cowpea and Bambara bean), and yam are the crops most commonly grown. Groundnuts are the most common cash crop (Quaye 2008). Other livelihood activities are important for supplementing household needs, with an important stratification of income accrued between traditional subsistence activities and involvement in the opportunities afforded by the formal sector in Wa. For women such formal sector activities include petty trading. For men, these activities include wage labor work as either a security guard or construction worker.

The foods that are produced on farms are predominantly consumed within the household. There is substantial reliance on foods purchased at market to supplement foods from the farm as well as to fulfill food needs when cultivated food supplies run out.

Diet is constructed around the aforementioned firm porridge TZ. TZ is traditionally made from sorghum or millet but is increasingly made with maize (Goody 1962, 1982). The ethnographic record does well to document the socio-cultural importance of TZ, and the ongoing symbolic importance of sorghum even though it is no longer widely used in TZ preparation (Goody 1982; Lentz 1999; Padmanabahn 2007).

Diet is also reliant on yam, beans, and a variety of different soups and stews made from cultivated and foraged vegetables. Despite this, Goody (1982), claims that because appetites prioritize TZ, from a culinary perspective, diet is not diverse. Though Goody's consideration of diversity is encompassed in a consideration of different food stuffs that create distinguishably different dishes, this a perspective that parallels a nutritional paradigm that prioritizes diversity as different food types that contribute to different micro and macro nutritional needs. Logan and Cruz (2014: 214) take a more nuanced look, drawing attention to the importance of diversity found within the same commodities or the same staple foods. They refer to the importance of the smoothness of staple foods diversely prepared and eaten throughout Ghana, calling Ghanaian eaters "connoisseurs of texture."

## **Methods**

This study occurred over the course of 12 months between 2014 and 2015 and used quantitative and qualitative methods to address food insecurity from a seasonal perspective. Unless otherwise specified, these methods were conducted with 148 adult men and women recruited from Chansa (n=84) and Tampiani (n=64). Information on economic activity, both farming and non-farming was collected from all participants. An agricultural survey identified number of acres farmed by men and women, with women

farming independent of their husbands denoted as such. During weekly surveying on agricultural labor allocation, men who engaged in either construction work or security guard work three times or more were coded as engaged in the formal sector. From the same surveying period, women who engaged in petty trading three times or more were coded as engaged in the formal sector.

To measure food insecurity in a standardized fashion, my research assistants and I implemented an eight question food insecurity Likert survey based on the Household Food Insecurity Access scale (HFIAS). Each question is coded according to the number of times the proposed situation was experienced in the month prior (1-2 experiences=1, 3-9 experiences=2, and 10 or more experiences=3; Min=0, Max=24). This survey was implemented in May, July, and October. Simultaneous to this implementation, anthropometric measurements were recorded to reflect seasonal changes in body mass. Height was recorded to the nearest centimeter using a Seca 213 portable stadiometer in the first iteration. Body weight was measured with a Tanita digital scale. With shoes off and bulky clothing items removed, weight was recorded to the nearest tenth of a kilogram and percent body fat was also digitally measured and recorded<sup>16</sup>. Body mass index (BMI) is calculated and underweight is determined according to World Health Organization standards, with weight-for-height ( $\text{kg/m}^2$ ) falling below 18.5 considered underweight (WHO 2004). Because distribution of these data is not normal, median scores and 25<sup>th</sup>/75<sup>th</sup> percentiles are reported. Wilcoxon rank sum tests detect differences in food insecurity survey scores, BMI, and body fat between the two communities.

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<sup>16</sup>There were very occasional instances in which weight was successfully recorded but body fat was immeasurable due either to feet that were too callused, or body fat that was minor enough as to be imperceptible by the digital scale.

To look at seasonal dietary diversity my team and I collected seven seasonal 24-hour dietary recall surveys with the full sample. Diversity in this context refers to diversity of staple foodstuffs rather than nutrient variability. In this process participants were asked to recall the meals they had consumed the day prior. We did not inquire about snacks, as such consumption is not considered “proper” eating. Focus was on a day oriented around a meal in the morning, a meal in the afternoon and an evening meal, a pattern of eating that participants expressed as desirable. We consistently prompted all participants to first recall the morning meal so that we could work through the day chronologically. Data on the amount of food consumed was not part of this process.

In the final three iterations of these 24-hour dietary recalls, my research assistants and I asked respondents to detail the kind of flour/s used if TZ was a meal reported. These data stand as actual consumptive patterns to compare to a survey on TZ flour preference. Sixty women (35 from Chansa and 25 from Tampiani) participated in this survey that inquired about the social and physiological preferences for different flours used in the preparation of TZ as well as how economic constraint factors into these preferences. Some, but not all of these women were part of the full sample of 148. Participation in this survey was based on convenience. I conducted odds ratio analysis with dietary diversity data to examine if one community consumed any type of meal or used any kind of flour more frequently than the other.

To situate current dietary practice against dietary practice in the recent past, a research assistant and I conducted semi-structured interviews with a subset of 23 elder women residents of the field sites. As was the case with the flour preference survey, some but not all of these women were part of the full sample of 148. These interviews

focused on how dietary practice has changed in the past 50 years, perceptions of why that change has occurred, and perceptions of change in terms of health.

## Results

As shown in Table 5.1, there are distinct differences in engagement in the formal economic sector for both men and women between these two villages. In Chansa, men were more involved in wage labor work and women were more involved in trading activities than their counterparts in Tampiani. This is indicative of higher incomes in Chansa than in Tampiani. Differences in farming were not as substantial. Women in Tampiani, but not men, were engaged in more farming than women in Chansa and spent more money on their farms than did the women in Chansa.

**Table 5.1: Summary Statistics for Agricultural and Formal Economic**

|                              | CHANSA         | TAMPIANI          | Wilcoxon Rank Sum(z) |
|------------------------------|----------------|-------------------|----------------------|
|                              | Median         | Median            |                      |
| Acres Farmed (men)           | 6.0 (5.2-7.0)  | 7.5 (6.1-8.8)     | -1.7                 |
| Acres Farmed (women)         | 1.0 (.75-1.25) | 2.0 (1.0-4.5)     | -3.2*                |
| Money for farm labor (men)   | 45.0 (13.3-70) | 25.0 (0.0-53.8)   | .98                  |
| Money for farm labor (women) | 0.0 (0.0-26.5) | 27.5 (17.58-71.2) | -2.5*                |
|                              | % Engaged      | % Engaged         |                      |
| Formal Sector (men)          | 47.6           | 13.3              | 5.2**                |
| Formal Sector (women)        | 33.3           | 0.0               | 6.4**                |

\*p<.01, \*\*p<.001, (95% confidence intervals in parentheses)



These differences in economic engagement extend to differences in the measurement of food insecurity. Food insecurity is common in the area overall, but seasonal effects were stronger in Tampiani than they were in Chansa (Table 5.2). Median seasonal food insecurity was higher in Tampiani (14, 6, 2) than Chansa (3, 3, 0) across all three survey periods ( $p < .001$ ). These differences extend to nutritional indicators. Chansa presented statistically significant higher BMI indicators for men and women as well as lower levels of underweight than Tampiani. Body fat does not show any distinguishable difference in distribution between men in the two communities, but there is a statistically significant difference in distribution of percent body fat in July and October when women in Chansa presented higher levels of body fat than women in Tampiani (July  $p < .01$ , Jan.  $p < .001$ ).

Results from dietary recall surveys (Table 5.3) resonate with the differences in nutritional indicators to a minor extent. In the April and May iteration of the meal surveying, Chansa had greater odds of eating three meals a day than Tampiani, indicating that residents in Tampiani were consuming fewer meals than residents of Chansa during that time period (Apr.  $p < .001$ , May  $p < .05$ ). As nutritional indicators improve in both communities, there is no evidence that either community ate more or less numbers of meals than the other.

While distinguishable differences in food insecurity scores and nutritional indicators are found between the two communities, seasonal 24-hour food recall surveys establish that both communities ate the same kinds of foods throughout the year. TZ is the most prevalently consumed meal in both communities in almost all survey iterations.

Prevalence is highest in April, with 75.6% of all meals in Chansa (Figure 5.1) and 89.5% of all meals in Tampiani (Figure 5.2) composed of TZ.

**Table 5.2: Summary Statistics, Food Insecurity, BMI, Body Fat**

|         | CHANSA   | N  | TAMPIANI   | N  | Rank sum<br>(z) |
|---------|--|----|--|----|-----------------|
|         | <b>Median FI</b>                                 |    | <b>Median FI</b>                                 |    |                 |
| May     | 3 (0, 7)   | 74 | 14 (11, 16)                                      | 47 | <b>-7.72***</b> |
| July    | 3 (1, 5)   | 78 | 6 (3, 10)  | 59 | <b>-4.8***</b>  |
| October | 0 (0, 1)   | 84 | 2 (0, 4)   | 58 | <b>-4.74***</b> |
|         | <b>Median BMI</b>                                |    | <b>Median BMI</b>                                |    |                 |
| May     | 21.43 (20.0, 22.76)<br><i>7% underweight</i>     | 81 | 20.37 (18.47, 21.69)<br><i>25.4% underweight</i> | 63 | <b>3.0**</b>    |
| July    | 21.13 (19.49, 22.53)<br><i>12% underweight</i>   | 66 | 19.92 (18.15, 21.66)<br><i>34.0% underweight</i> | 56 | <b>2.5**</b>    |
| October | 21.36 (19.77, 22.99)<br><i>12.1% underweight</i> | 61 | 20.33 (19.02, 22.65)<br><i>15% underweight</i>   | 56 | <b>2.2*</b>     |
|         | <b>Median Body Fat</b>                           |    | <b>Median Body Fat</b>                           |    |                 |
|         | <b>Men</b>                                       |    | <b>Men</b>                                       |    |                 |
| May     | 0.06 (0.04, .09)                                 | 39 | 0.07 (0.05, 0.10)                                | 27 | -1.10           |
| July    | 0.07 (0.04, .09)                                 | 34 | 0.05 (0.04, 0.06)                                | 17 | 1.88            |
| October | 0.08 (0.06, .11)                                 | 31 | 0.06 (0.04, 0.20)                                | 23 | .60             |
|         | <b>Women</b>                                     |    | <b>Women</b>                                     |    |                 |
| May     | 0.26 (0.21, .29)                                 | 40 | 0.23 (0.20, 0.25)                                | 33 | 1.53            |
| July    | 0.27 (0.23, .30)                                 | 32 | 0.21 (0.19, 0.26)                                | 30 | <b>2.65**</b>   |
| October | 0.28 (0.23, .32)                                 | 28 | 0.20 (0.19, 0.28)                                | 28 | <b>3.36***</b>  |

\*\*\*p<.001, \*\*p<.01, \*p<.05, 25<sup>th</sup> 75<sup>th</sup> percentiles in parentheses

The rate of TZ consumption slowly declines through August for both sites and by September decrease to under 40%. It is at this juncture that yam based foods make a substantial appearance in diets. Yam foods actually surpass TZ in September in Tampiani

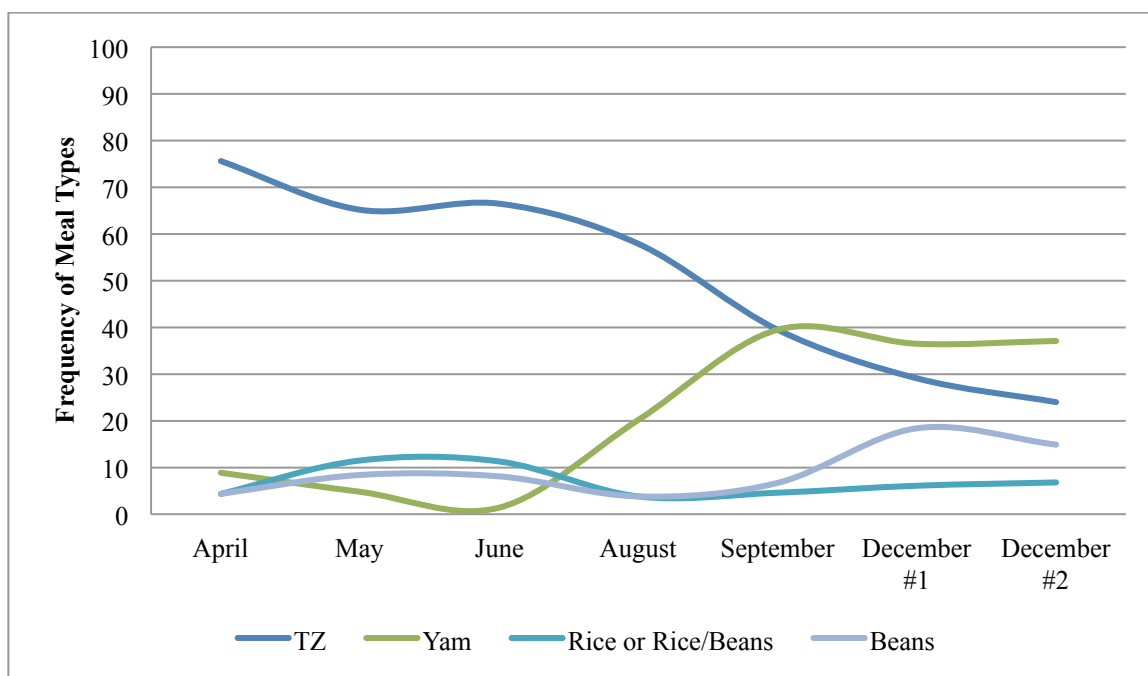
(52.4%). Yam foods are slightly more consumed or consumed at the same rate as TZ in both communities for the final two survey iterations in December.

**Table 5.3: Odds Ratios for Meals Consumed by Recall Iteration**

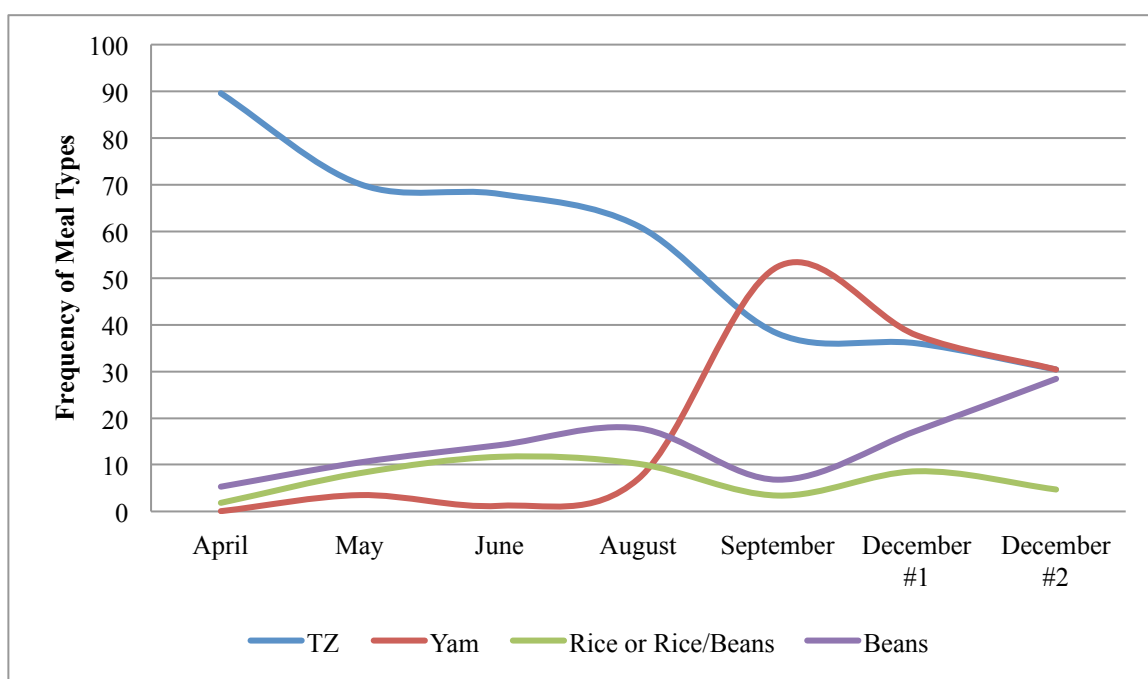
|                    | <b>April</b>     | <b>May</b>     | <b>June</b> | <b>August</b>    | <b>Sept.</b>   | <b>Dec.#1</b> | <b>Dec.#2</b>   |
|--------------------|------------------|----------------|-------------|------------------|----------------|---------------|-----------------|
| 3 Meals Consumed   | Chansa<br>4.6*** | Chansa<br>2.0* | N/A         | N/A              | N/A            | N/A           | N/A             |
| TZ                 | Tamp.<br>0.36*   | N/A            | N/A         | N/A              | N/A            | N/A           | N/A             |
| Yam                | N/A              | N/A            | N/A         | Chansa<br>3.4*** | Tamp.<br>0.59* | N/A           | N/A             |
| Rice or Rice/Beans | N/A              | N/A            | N/A         | Tamp.<br>0.35*   | N/A            | N/A           | N/A             |
| Beans              | N/A              | N/A            | N/A         | Tamp.<br>0.18*** | N/A            | N/A           | Tamp.<br>0.44** |

\*\*\*p<.001, \*\*p<.01, \*p<.05

Meals composed of rice or rice and beans were a small segment of these diets throughout the season. Prevalence peaked in the second round for Chansa (11.5%) and in the third round (11.7%) for Tampiani. Bean based meals peaked in the December recalls in both Chansa (14.9%) and Tampiani (28.4%). Figures 5.1 and 5.2 provide a visual representation of how this pattern of seasonal dietary diversity is nearly identical for both Chansa and Tampiani. The minor differences in composition of meals between the two communities is confirmed through odds ratio analysis that shows that neither community consistently demonstrated eating more of any particular kind of food than the other (Table 5.3).



**Figure 5.1: Results from Seasonal 24-Hour Dietary Recalls, CHANSA**



**Figure 5.2: Results from Seasonal 24-Hour Dietary Recalls, TAMPIANI**

If anything, it is surprising, given that they presented poorer nutritional indicators and food insecurity scores, that Tampiani showed greater odds of eating rice or beans in August iteration, yam in September, and beans in the second December iteration than did Chansa. Chansa presented only one instance of a greater likelihood of eating a non-TZ food (yam) than the residents of Tampiani, but the uniqueness of this is tempered by Tampiani's greater odds of eating rice as well as beans.

Results from these diet recall surveys suggest that dietary diversity, in terms of the consumption of different kinds of cereals and legumes, is non-existent for a substantial portion of the year. Women who have experienced at least 50 years of cooking and eating in these field sites confirm that how they eat now is not reflective of how they have cooked and eaten in the recent past. Some women indicated that a primary cause of this decrease in diversity were changes in agricultural activity and productivity. They recalled that their early days of marriage were better for farming, thus ensuring that households were sufficient for an entire year with self-produced and diverse foodstuffs. In particular, three women mentioned how harvests used to be so prolific that as the new harvest was coming in, they often dispensed of stored food by feeding it to livestock. Though not necessarily negating the idea that agricultural constraint is culpable in dietary change, women also proclaimed that the decreased availability of diverse foodstuffs (i.e. non maize food stuffs) in households results from the increased prices at which these products can be sold.

In terms of particular kinds of foods that have lost presence in contemporary dietary patterns, sorghum was identified as a food no longer widely eaten. Most women acknowledged that in those days (approximately at the time immediately prior to and

post-independence 1940s-1960s) they prepared their TZ with sorghum. Maize was grown, but was largely grown for sale, not consumption. Some women acknowledged that this loss of sorghum in the diet resulted in poorer population health, especially in terms of strength. Others, however, declared that maize was a worthy substitution, especially since it can be prepared to be soft, a textural condition that many people prefer because they can eat more of it. Beans and yams were described as more prolific in the past and therefore integrated into diet on a weekly or daily rather than seasonal basis. Bean flour was described as a common soup ingredient, a practice that is rare today. Regarding how a diverse diet relates to health, it became clear through interviews that different foods make different contributions to the bodily needs. Three bodily needs emerged in these discussions: *enge* (body), *fanga* (strength or energy) and *zing* (blood). Body refers to composition of fat tissue and represents an important physical, and externally visible, dimension of well-being. Strength refers to ability to carry out work activities effectively and efficiently. Blood refers to the amount of blood perceived to be in the body, with low blood seen as an illness.

In addition to exploring how standardized measurements of food insecurity compare to assessments of actual dietary practice food insecurity, a further goal of this study was to evaluate not just inter meal diversity, but also the intra meal diversity of the staple porridge TZ. TZ is prepared from a grain based flour and a fermented starter and can be prepared to achieve decipherable textures through the amount of water added, how the grain has been milled, as well as through the addition of cassava flour. TZ may be made soft through the addition of cassava flour. However, the softest TZ is that which is prepared through the removal of the husk of the maize kernel. This involves soaking the

maize for several days as well as an extra (and more expensive) step in the milling process. This TZ also attains the purest white color. TZ is made hard by not following either of these steps and instead only adding water. This method is used for either maize or sorghum TZ.

According to results from the TZ preference survey, different kinds of TZ meet different needs (Table 5.4). When money is not a constraint, survey participants favored the more expensive varieties of TZ for reasons of social prestige and physiological satisfaction (satiation). Maize TZ made soft through the removal of the husk of the maize kernels is the variety that survey participants overwhelmingly (84.6%) selected as the variety they would serve to indicate their ability to eat a prestigious food. This is the softest version of TZ, and the second most expensive, because of the added cost in the milling process. When the goal was to consume a TZ that most satiating, this variety is again indicated as preferred (29.2%), but the most preferable method is TZ made of sorghum (35.4%). Sorghum costs two to three times the equivalent amount of maize, making it the most expensive form of TZ to prepare.

When the proposed scenario was that money was constrained, responses regarding the variety of TZ preferred for meeting physiological need were spread fairly evenly between hard maize (26.2%), soft maize TZ made with cassava flour (33.8%), and TZ made of sorghum (29.2%). Because sorghum is expensive, I asked women how they would be able to afford this option given the proposed financial constraint. Women unanimously reported that they would bypass market prices by borrowing sorghum flour from a friend.

**Table 5.4: Flour Preference Survey (n=60, 35 from Chansa, 25 from Tampiani)**

| Type of TZ                          | Money and prestige | <i>Scenarios:</i>   |                        |
|-------------------------------------|--------------------|---------------------|------------------------|
|                                     |                    | Money and satiation | NO money and satiation |
| Hard Maize                          | 6 (9.2%)           | 7 (10.8%)           | 17 (26.2%)             |
| Soft Maize ( <i>Cassava flour</i> ) | 8 (12.3%)          | 11 (16.9%)          | 22 (33.8%)             |
| Soft Maize ( <i>No husk</i> )       | 55 (84.6%)         | 19 (29.2%)          | 2 (3.1%)               |
| Sorghum                             | 1 (1.53%)          | 23 (35.4%)          | 19 (29.2%)             |

In comparing these preferences for consuming a prestigious or satisfying TZ, actual consumption patterns demonstrate that these populations are reliant on eating the cheapest TZ (Table 5.5). Noticeably missing from consumption patterns is TZ made with sorghum, a method preferred for reasons of satiation. Soft TZ prepared with the removal of the husk is also minimally consumed. Overwhelmingly, the cheapest methods of TZ preparation (hard maize and soft maize with cassava flour) were the varieties most often consumed. In two iterations, Tampiani presented greater odds than Chansa of eating hard maize TZ. In those same iterations, Chansa presented greater odds of eating soft maize TZ made with cassava flour.

**Table 5.5: Frequency of Consumption of TZ by Flour and (Odds Ratio Analysis)**

| Recall Iteration | Hard Maize       | Soft (Cassava)  | Soft (No Husk) | Sorghum |
|------------------|------------------|-----------------|----------------|---------|
| Sept. CH         | 25.7%            | 64.3 % (5.2)*** | 7.1 %          | 2.9 %   |
| Sept. TMP        | 69.8% (0.16) *** | 22.6            | 3.8 %          | 3.8 %   |
| Dec. #1 CH       | 41.4%            | 32.9 % (5.1)*** | 25.7 %         | 0.0 %   |
| Dec. #1 TMP      | 65.5 % (0.36)**  | 8.6 %           | 17.2 %         | 8.6 %   |
| Dec. #2 CH       | 39.2 %           | 45.1 %          | 15.7 % (7.8)*  | 0.0 %   |
| Dec. #2 TMP      | 55.6 %           | 42.2 %          | 2.2 %          | 0.0 %   |

\*\*\*p<.001, \*\*p<.01, \*p<.05



## **Discussion**

Collectively, these data tell two different, yet unifying stories about food insecurity in these neighboring communities in Upper West Ghana. Objective measurements based on food insecurity surveys and anthropometrics indicate that one community is more food insecure than the other. Contextualized against understanding of variability in economic activity, this first story relays that residents of Chansa are more secure in their ability to access food, and face less severe nutritional risk than their colleagues in Tampiani. Analysis of actual eating patterns, contextualized in subjective desires and preferences for diverse foods and food textures, shows, however, that neither community is necessarily satisfied or content with their diet. The second story, therefore relays that regardless of their economic ability to access foods, residents of Chansa, much like their colleagues in Tampiani, are procuring foods and meals that are not affectively pleasing. I interpret these stories as a product of their methodological and analytical orientations to measure food insecurity as a condition of food needs at an economically and biologically relevant level and food insecurity as an experience of food desires that exists at a social or psychological level. Implementing both of these ways of measuring and analyzing food insecurity enables a holistic understanding of what food insecurity is in any given context, what is causing it, and how people cope.

In terms of this study, results from the food insecurity survey and anthropometrics importantly document fluctuations in the severity of food insecurity, with a time period between February and August proving to be more severe for residents of both communities. These are seasonal fluctuations that are typical for the region and best understood in terms of an agricultural cycle that not only brings harvested foods into

households, but also induces greater physical workloads for planting, weeding, and harvesting crops (Hesselberg and Yaro 2006). Nutritional indicators trend in similar seasonal ways. This is not surprising given that subsistence populations in this region, and elsewhere in Africa, have historically demonstrated such patterns of seasonal changes in body composition attributed to physical activity levels and food consumption patterns (Hunter 1967; Huss-Ashmore and Goodman 1988).

Survey results also indicate that despite the close proximity of these neighboring communities and similar agricultural practice, Chansa is more food secure than Tampiani. This is likely attributable to variation in the level of economic activity. Because Chansa is more engaged in the formal sector than Tampiani the incomes procured are likely higher, enabling more food purchase and buffering households from more severe food insecurity in terms of the quantity of food consumed. Such findings are important to underscore because they denote how, even in contexts that are “subsistence” oriented food security is still wholly encompassed in entitlements to food that extend beyond food production (Watts and Bohle 1993).

Comparative analysis of nutritional indicators shows that women in Tampiani demonstrated poorer nutrition than women in Chansa. It is likely that economic activity as well as physical activity levels also explains these differences. During the research period, women in Tampiani farmed more and invested more money in their farms than the women in Chansa. In contrast to the relatively minor physical exertion associated with petty trading, an economic activity that women in Chansa were engaged in, women in Tampiani were reliant on making charcoal as their primary income generator. While I am constrained by the lack of objective data on physical activity levels, charcoal

production was readily identified by women in Tampiani as a physically taxing activity that they had to engage in. It is likely that their involvement in this activity also contributed to their poorer nutritional statuses.

Results from the 24-hour dietary recalls build on the surveys and nutritional indicators to a minor extent. With Chansa exhibiting less severe food insecurity survey scores, a feature I have attributed to greater income earning power, it is not surprising that in the first two recall cycles they also exhibit greater odds of eating three meals a day than Tampiani. This indicates that the survey methodology does a good job at assessing the amount of food consumed. The ability for this survey to additionally capture the accessibility of a quality diet--what food insecurity discourse refers to as “preferred foods” is not as robust, however.

Reflections on trends in dietary change, along with the generalized pathos that is evoked in the sentiment, “every day it’s *tuo zafi*” suggest how cultural notions of appetite and satiation guide a localized conceptualization of food insecurity. What is most striking about these recall data is that throughout most of the 12 months, TZ dominates household consumption in both communities. While TZ is a culturally acceptable and respected food in this context, the reactions from people about the repetitiveness of this meal during the most food insecure phase indicates that there is a threshold for tolerance.

The reactions that people in these field sites had to eating TZ for every meal resonates strongly with Arianna Huhn’s research in Mozambique. The idiom that her interlocutors put forward, “the tongue only works when a person is without worries,” indicates that food’s taste, and contributions to bodily needs, is beholden to the affective state of the eater. It was common during these dietary recall surveys for people to respond

that the food (the TZ) was in the house, but they did not eat it. This could be reflective of diminished appetite from repetitive eating, or, as suggested by Huhn, it could be that because eating is a culturally constructed process central to well-being, the refusal to eat became a way to express dissatisfaction with exclusion from a meaningful existence (Huhn 2013: 203).

When results from the dietary recall surveys are compared to results from interviews on dietary practice in the past, the practice of eating TZ for every meal is shown to be abnormal and unacceptable. This empirically challenges a long-standing assumption about African food ways, that the cultural reverence for staple dishes such as TZ precludes a culinary system (Goody 1982). Past dietary diversity is reported as occurring on a daily level, with households mixing TZ meals with meals composed of beans and either boiled or pounded yam on a daily basis. Contemporary dietary practice, however, reflects that meal diversity throughout the day is more reflective of seasonality, with greater diversity more apparent at harvest time. While the pathos of the line “every day it’s *tuo zafi*” confirms affective displeasure with this repetitive eating, when framed against the local ways of categorizing different foodstuffs into the roles they play in bodily processes, health is further diminished by this rote dietary behavior.

Interviews on dietary change also provide important insight into why contemporary diet is different than the recent past. Decisions about the procurement of food reside in an ecological and economic nexus particular to this context. In Upper West Ghana, changing rainfall patterns and declining soil fertility conditions are recognized as challenges to cultivating enough food for the house (Nyantakyi-Frimpong and Bezner Kerr 2015a). Compounding this agro-ecological issue are food prices. Compared to

maize, a crop that is grown prolifically throughout Ghana, foodstuffs such as yam, sorghum, and beans, are crops that are produced only in this semi-arid region of Ghana and perhaps in association with this, these crops also have higher market values. These higher prices compel households to sell these crops rather than keep for consumption. During fieldwork, it was not uncommon to witness farmers selling their rice, sorghum, or yams to purchase a greater quantity of maize. Even though this population is producing for subsistence and not practicing commodity production, their dietary practice is still guided by food prices, a pattern resonating with research elsewhere in Africa. Perhaps even more importantly, this research helps confirm that appetites for diverse foods, as well as foods such as sorghum that can be considered more traditional, is not eliminated in this dietary transition, but rather compromised by financial need (Holtzman 2009; Noack and Powu 2015).

In considering the textural composition of food and its associations with social and physiological cravings, I challenge predominant paradigms of dietary diversity and show how a diet that to the etic eye might seem rote or repetitious is complex through sensory appeal (Mann et al. 2011; Sutton 2010). While data relays that diversity can be found within TZ, actual consumption patterns demonstrate that this diversity is not enacted. This more microscopic analysis of diversity mimics the earlier exploration of diversity by showing that people in these villages are not only largely reliant on maize for a majority of the year, the least costly food stuff, but also the least costly ways to produce a porridge from maize. By not engaging in either sorghum TZ or the most prestigious form of this staple porridge, people are sacrificing important social, psychological, and biological merits of food for the most affordable way to feed the household. This more

intensive exploration of dietary diversity indicates, similarly to the dietary diversity recalls, that what guides decision-making processes is the cost of food. As will be seen in the following chapter, these decision-making processes regarding food are embedded in how households are weighing their short and long-term investments in needs that extend beyond food.

While findings from the more objective measurements indicate differences in the severity of food insecurity between these two communities, these methods fail to account for why food insecurity is occurring. Data from the more subjective analysis of food insecurity shows why food insecurity is occurring in this context as well as how food insecurity is more than a lack of food, but even more so a process of undesirable dietary change. Such findings should most profoundly speak to the projects and programs that aim to end food insecurity in this region, specifically the agenda of the current Feed the Future paradigm. It is particularly important to outline how the plans of the Feed the Future agenda neglect to address the likelihood of how the increased production of maize, rice, and soy will affect the cost of the locally produced foods (beans, yams, and sorghum) that people in this context express as relevant to their dietary needs. As such, it is likely that the trend for commodity production to deteriorate, rather than enhance, perceived food security and well-being is likely to continue in this context (Dewey 1981; Fleuret and Fleuret 1980).

## **Conclusion**

In this chapter I have contended with the ongoing tension within food insecurity studies to take the social and psychological role of food as seriously as the biological role of food. This, ultimately, is a problem of equally measuring accessibility of both quantity

and quality of available food. I put forward a tiered analytical approach to show how a focus on quantity produces results that are telling about food insecurity as an economic condition of biological relevance, but that a focus on a more subjective experience results in data that are better at informing researchers about what people are eating and how they relate to that dietary experience. I show that even though there are statistically different levels of food insecurity in two communities as measured by a standardized instrument, experientially, both communities exhibit dissatisfaction with their diets as they are practiced. Each indicator explored provides important information, but it is through the holistic exploration that the context can be more fully understood.

Because this approach underscores how local food preferences are constructed in relation to perception of health, I present a renewed framework for food insecurity studies that can close a gap between identifying African populations as food insecure and the challenges in then appropriately intervening to enable food security. By embracing a more subjective consideration of food insecurity, there is more leeway for African populations to declare the food systems that they want to initiate food security. As food insecurity interventions such as Feed the Future are unveiled across the northern regions of Ghana—and throughout Africa—such holistic exploration should be sought to better inform the processes that enable households to cultivate their own or procure an income that ensures that the most desired foods are accessible. As a discipline equipped with the methodological and analytical tools to expose the politically tinged ecological and economic causes of food insecurity, anthropology is well-positioned to further challenge food insecurity analyses to incorporate inquiry into everyday acts of eating and how such

everyday acts are perceived to confirm, challenge, or heighten results from more objective assessments.



**CHAPTER 6**  
**“TOO MANY WORRIES”: COPING WITH FOOD INSECURITY IN**  
**UPPER WEST GHANA<sup>17</sup>**

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<sup>17</sup> Ham, Jessica and Bram Tucker. To be submitted to *Development and Change*.

## **Abstract**

Food insecurity is one of many stressors experienced in rural Ghana. As most rural populations in Ghana are dependent upon both self-produced and purchased food, food insecurity in these contexts is embedded in webs of both ecological and economic vulnerability. Given these complications, it is beneficial to explore how food insecurity is situated in a broader context of worries to better understand household decision making processes. This approach can help determine both if and how food insecurity is locally perceived to be a problem regardless of how it stands as independently measured problem.

This chapter investigates how the prevalence and severity of food insecurity compares to and is connected with other worries using results from a participatory risk mapping exercise conducted with men and women in Ghana's Upper West Region. Results from this participatory risk mapping exercise are compared to other methods that help contextualize the circumstantial experiences that induce or alleviate worry. Results indicate that food insecurity is a prevalent and severe worry in this context. Surprisingly, worries over food strongly coincide with worries associated with education. This, I argue, speaks to two issues with which the social sciences must more carefully engage. One, how to better address a continuum of time, acknowledging how both immediate and future needs occupy minds and inform decision making and two, how to more carefully understand how resilience is envisioned and enacted in localized and quotidian decision making processes in an increasingly vulnerable socio-ecological and socio-economic climate.

## **Introduction**

In February 2014, prior to the start of the seasonal surveying that would occupy most of my days in the field, Abdulai and I sat under the shade of a tree with a man from Tampiani who always patiently and cordially engaged with us. In this visit, however, he effusively responded to our question of what poverty looked like in Tampiani. He had many ideas about this. He said that you could tell if a household was poor if they did not have any zinc roofing and only used mud. He said that if people wore torn or dirty clothing they were poor. The same held true for people who lacked sandals and were barefoot. If men wore their hair bushy, it indicated that they could not afford to pay a barber. Children who went to school without uniforms were another sign of poverty. So, too, were households who did not harvest enough food to feed their family.

It was at this point in his response that two primary school students walked by on their way home from school. One child was in a school uniform but no sandals. The other child was wearing sandals, but was not wearing the standard school uniform. All of us simultaneously recognized that these two children exemplified two of the examples of poverty that were just referenced. For our confidant, this actualization created a visible sense of satisfaction regarding his ability to so properly describe poverty in Tampiani to outsiders.

This description and then demonstration of the complexities of poverty in Tampiani speaks to how poverty is not just coping with one need or experiencing just one kind of constraint. Food insecurity is often understood to be a proxy for poverty. While such assertions importantly encompass food insecurity as a condition of constrained social and financial resources, such funneling can encourage assumptions that food is the

most pressing need. As such, with the focus of this dissertation on the affective experience of food insecurity, contextualizing how food needs and desires exist in a nebulous web of decision-making processes is merited. Whereas the previous chapter established that food insecurity is an experience in the two field sites, this chapter investigates to what extent food insecurity is considered a concern or a worry. In this way, this chapter addresses how concerns over food intersect with other needs. I take an analytic approach common to livelihoods oriented studies that consider decision-making processes along a continuum of time that includes the present but extends into the future (de Waal 1989; Davies 1996; Hampshire et al. 2009.)

To clarify how food needs intersect with other household needs and goals, this study employed listing and ranking exercises alongside other subjective measurements of socio-economic status to show what people worry about in rural northern Ghana as well as why these expressed worries are relevant. This approach identified and positioned the subjectively experienced risks that create a condition of vulnerability in the Upper West, and not exclusively a condition of food insecurity. I argue that a particular benefit of this method is the ability to assess risks in a continuum of time that provides insight into how the tension between immediate and long term needs is perceived and negotiated and therefore identifies how rural households both perceive not only their current socio-economic situations, but the paths that they identify as a way forward.

### **Processes of Decision Making Under Conditions of Vulnerability**

Whether or not impoverished people are able to plan for the future is a revived dialog in development studies. In his now classic study of famine in Sudan in the early 1980s, (1989) found that households had the means to buy food, but did not in order to

reserve funds for agricultural inputs that would be used in the coming agricultural season. This study established that immediate food needs were not always the most pressing worry for households, even if they might experience hunger. It further established that forward thinking and planning was central to long term household viability. Since this study, research from rural development and livelihoods specialists has confirmed his findings. Davies' (1996) exploration of rural livelihoods in Mali found that when livelihood activities intended to help households build asset reserves for the future were instead directed to meeting immediate needs, households lost their safety nets and became susceptible to increasing vulnerability. Hampshire and colleagues (2009) used the consideration of the tension between immediate needs and an uncertain future to explain why some parents in Niger did not seek healthcare services for sick children, but instead reserved their assets for future needs. In Nepal, Nightingale (2015) found that families regularly went hungry so as to direct income to educating their children as well as take out high interest loans that they envisioned as necessary for long term household stability in a changing climate.

Collectively, this body of research attempts to understand rural households as employing adaptive measures that contend with both present and future needs. The focus of this approach is that vulnerability (or poverty) is not homogeneously experienced or coped with and is never an experience disconnected from larger political and economic processes in either the present moment or anticipated future. Increasingly though, the capacity for human enacted resilience is challenged by neurobiological and psychological studies that posit that poor people do not plan for their future, not because they act irrationally as economists would want us to believe, but because they are rather

cognitively impaired by the effects of poverty. In recent and widely cited studies, Mani et al. (2013) find that populations are cognitively impaired by the stress of poverty and therefore make poorer decisions than those who are not burdened with the stress of poverty. Shah et al. (2012) focus on how scarcity creates a particular mindset that advances decisions that may impair future economic stability.

These newer avenues of poverty analysis, though identifying some of the biological complexities contributing to chronic poverty, are divorced from the political and economic processes that generate poverty. As such, they are decontextualized from the realities in which people make decisions about their present and future needs and thereby encourage further empirical research that can more precisely demonstrate how people conceive of their immediate and future risks, especially as a condition like food insecurity is intertwined. The intent of this study is to look at how risks associated with food insecurity, including the risks associated with both food availability and food accessibility, are situated amongst other immediate and future worries in Upper West Ghana.

### **Rural Livelihoods and Food Insecurity in Upper West Ghana**

Food insecurity remains one of the most salient indicators of poverty in Ghana, especially for designating the disparities between northern Ghana, with its reputation as relatively food insecure, contrasted to southern Ghana, which is identified as relatively food secure (Biederlack and Rivers 2009). As was established in Chapter 4, agriculture remains one of the most prominent livelihoods for rural Ghanaians in the north. The unimodal and variable rainy season produces a semi-arid ecology in which agriculture is a risky pursuit. Extensive empirical research establishes that in the past, rural communities

were able to contend with this variation through various agro-ecological and social techniques (Richards 1985; Watts 1983). Increasingly, research attention in semi-arid West Africa is on how a changing climate will affect agrarian based livelihoods in this context (Acheampong et al. 2014; Kusakari et al. 2014; Nyantaki-Frimpong and Bezner-Kerr 2015a). Regarding the relationship between food insecurity and agricultural activity, it is pertinent to regroup around a central finding of Chapter 5, that food insecurity in the two communities that compose this study is not strictly a product of food production, but food accessibility.

Ongoing reliance on agriculture as the primary livelihood in the rural Upper West co-varies with low rates of formal education that constrain livelihood diversification opportunities. While populations in southern Ghana were exposed to formal education during the early years of British rule to meet colonial demand for civil servants, formal schooling did not reach the Upper West until the 1930s, largely through the efforts of the Catholic church (Behrends 2002). In combination with the prioritization of the southern extractive industry, the later arrival of education to the north continues to constrain northern livelihood opportunities.

However, as primary schooling becomes more universally achieved in the Upper West, and as more secondary schools are instituted, education is emerging as a more accessible feature of life. Chansa and Tampiani acquired their first primary schools within the past ten years. The current generation of children in these villages, are, therefore, the first generation in either community to have access to a formal education.

## Methods

This study occurred over the course of two field visits. In the summer of 2012 Wahid Yahaya and I conducted participatory listing and ranking exercises in Tampiani. In the primary phase of fieldwork, in 2014, Abdulai and I conducted semi-structured interviews on socio-economic mobility to structure listing and sorting exercise employed in both Chansa and Tampiani that helped to contextualize results from the mapping exercises.

In 2012, 83 men and women were opportunistically sampled in Tampiani to participate in what is referred to as a risk mapping exercise. Participatory risk mapping is a method that interrogates poverty experiences in cognitive, social, and political realms. As advocated by Smith et al., (2001: 9) “Individuals’ risk assessments are thus a composite expression of exposure, perception, mitigation, and coping.” The method is increasingly used to contextualize subjective risk perception. By engaging in subjective risk assessments, it becomes possible to move beyond assuming that risks in a certain context as homogeneously perceived, experienced and managed and it becomes possible to conceive of risks as interconnected (Smith et al. 2000; 2001).

Like previous studies, we adopted a notion of risk that is subjectively oriented and sought people’s perceptions of the unfavorable circumstances they face in their day-to-day life. In other words, this method is concerned with ascertaining the factors or things that present worry. As such, we asked respondents to exhaustively list all of their worries. This prompt was consistently phrased using the Wale/Dagaare word for worry, *teeha*. Once all worries were listed we then asked respondents to rank the severity of these worries from most worrisome to least worrisome. During this exercise it was common for



interlocutors to provide commentary on why certain factors worried them or were more worrisome than others. Notes from these commentaries were recorded to provide a framework for understanding how and why these worries may be interconnected. The number of worries mentioned by the respondents ranged from just one to seven. Sixty-seven percent of respondents listed three or more risks. Because the reporting of risks could be interpreted as a result of the most immediate risk context, it is important to note that this exercise occurred in the months of July and August. Seasonally, this corresponds to the rainy season and a time when all crops have been planted and harvest is approximately one to two months away.

Worries from the risk mapping exercise were assessed thematically and arranged into 33 categories. From these data both frequency and severity are calculated and then used in the formulation of a risk index. Frequency is easily calculated by the number of respondents who reported the worry divided by the sample size. First I calculated frequency for the sample as a whole. Then, for the factors listed at a frequency of 10% or greater I calculated frequency by gender and looked for differences in frequency of reported worries between men and women using Chi Square analysis.

Calculating severity required more detailed analysis. Because individuals had different numbers of reported worries to rank, an index that employs uniform intervals between ranked risks was applied to ascertain severity for each individual worry (Smith et al. 2000: 1948)<sup>18</sup>. Through this approach, the severity of the worry is placed on a range from one (most serious) to two (least serious). Severity for each factor is reported as a mean of these calculated rankings. The risk index was finally calculated as the frequency

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<sup>18</sup>For each respondent, the interval is defined as  $1/n_i$  where  $n_i$  is the number of risks identified by respondent  $i$ . Calculating an individual risk severity value  $R_{ij}$  for risk  $j$  of rank  $r$  among a group of  $n$  risks is:  $R_{ij} = 1 - (r_{ij} - 1)/n_i$  (Lu et al. 2014: 377).

divided by the mean severity of each worry. Each worry therefore falls into a range of zero to one, with zero being not risky and one being universally risky. A benefit of this risk mapping method is that it enable graphs that create a strong visual statement of the relationship between these two dimensions. In order to create an intuitive graph, so that more severe risks occur at the upper end of the y axis, rather than at the bottom, I followed Smith, Barrett and Box (2001) and Lu et al. (2014) recommendations to use the formula  $2-R_{ij}$ . This plots severity that is deemed important closer to one and severity that is not as important closer to zero.

To avoid what some researchers have called the deficit-based analysis constraint of risk mapping, in 2012 we additionally sought data on the circumstances that can bring happiness (Lu et al. 2014: 376). From a sub-sample of respondents involved in the risk mapping (n=73), we asked about the factors or activities that bring happiness. These items were free listed but not ranked. I placed happiness factors into 30 categories and frequency is reported to provide comparative analysis to the risk mapping activity.

An even smaller sub-sample (n=30) of the risk mapping sample was included in an exercise called “the ladder of life” detailing subjective assessments of perceived social and economic well being across time. In this exercise, participants were asked to rank on a scale of one to ten (ten being the best possible circumstances) how their life circumstances were five years ago, their status in the present moment, and their imagined future status in five years. To create a visual scale, and to mimic the effect of a ladder, we arranged ten shea nuts of the same size in a vertical line in front of the respondent. Upon placement of the shea nuts, we indicated that the shea nut closest to their body (one) represented the worse possible situation and the shea nut at the top, or the furthest from

their body (ten), was the best possible situation. Once this was clear, respondents physically picked up or touched the shea nut that they felt addressed their perception of their past situation, their present situation, and their future situation and the rankings were recorded. I calculated mean scores for these perceived states of well being across time and employed t-tests look for differences in means between perceptions of the future as compared to both the present and the past.

In 2014, to create a list of contextually important activities that people perform and material items that people own that distinguish socio-economic status, we conducted semi-structured interviews with men (n=9) and women (n=10) who were selected by convenience. We used two questions as prompts: 1) What are the things you need or activities you must do so that people will know you are doing ok? and 2) What are the things you need or the activities you must do so people will know you are improving in life? Once these interviews no longer generated any new items, a list of 53 items/activities was obtained.

These 53 items/activities were incorporated into a standardized list for a sorting exercise with 83 men (n=41) and women (n=43) in Chansa (n=63) and Tampiani (n=20). People who participated in this exercise were sampled by convenience and effort was made to balance between the young and the middle aged so as to not capture just one age demographic. Some, but not all of the participants were part of the sampling procedure detailed in the previous chapter. With consistent ordering, each item/activity was written on a piece of paper that was orally communicated to study participants before they placed it into one of three socio-economic categories (“just ok,” “improving,” and “wealthy”). These socio-economic categories were written on pieces of paper and placed in a

horizontal row (with “just ok at the left, “improving” in the middle, and “wealthy” to the right) in front of the participant. Once all categorizations were made, we reminded respondents of the items/activities that they placed in the “improving” category and asked them to select (but not rank) the three most important items/activities for improving one’s economic standing. I calculated prevalence of how each item or activity was organized into the socio-economic categories. Of these 53 items/activities that were sorted, I selected items/activities that demonstrated at least 60% prevalence in at least one of the categories. This eliminated 28 items/activities that were not widely agreed upon as existing in only one category. Finally, I identified the three most prevalent items/activities that were important to improving one’s socio-economic status.

## **Results**

In terms of the frequency of the 33 reported worries (Table 6.1), only 2 factors emerged as mentioned by half or nearly half of the sample. Food (51%) was the most frequently reported worry, followed closely by education (48%). The factors that were reported by 20-30% of respondents include lack of money (30%), welfare of children (20%), rainfall (20%), and poor harvest (17%). Chi square analysis of the worries by gender shows that men and women are relatively in step with one another. Only the costs or limited profits of farming were reported as more prevalent by men than women ( $p < .05$ ). This is not a surprising difference considering that in this context farming is the socio-economic responsibility of men. Of the 33 factors of worry, 26 were reported at frequencies of 10% or lower, indicating that a lot of the worries were not reported by a majority of the sample (Table 6.2).

The second dimension of the risk mapping exercise is the severity of reported worries. With severity ranked between 1.0 (the most severe) and 2.0 (the least severe), 17 of the risk factors fall between 1.0 and 1.5. Of those 17 risk factors, nine are reported at frequencies of 10% or higher. The calculated risk index (frequency/severity) ranges from 0 (no risk) to 1 (universally most severe risk). Education proves to be the riskiest factor (0.39), followed by food (0.33), money/poverty (0.22), welfare of children (0.15), the costs or profits of farming (0.14), rainfall (0.14), and poor harvest (0.12). The remaining 26 worries fall at or below 0.09 on the risk index, suggesting that there is a clustering of worries that are neither prevalently nor severely ranked worries.

**Table 6.1: Frequency ( $\geq 10\%$ ) of Worries (by Gender), Severity, and Risk Index**

| Source of Risk           | Freq. Full | Freq. Men | Freq. Women | ChiSq (df) | Severity Full Sample Mean (SD) | Risk Index |
|--------------------------|------------|-----------|-------------|------------|--------------------------------|------------|
| Food                     | 0.51       | 0.50      | 0.51        | 2.0 (3)    | 1.53 (0.38)                    | 0.33       |
| Education                | 0.48       | 0.50      | 0.47        | 1.23 (4)   | 1.23 (0.33)                    | 0.39       |
| Money/poverty            | 0.30       | 0.21      | 0.38        | 2.79 (4)   | 1.39 (0.43)                    | 0.22       |
| Welfare of children      | 0.20       | 0.13      | 0.27        | 3.75 (4)   | 1.36 (0.41)                    | 0.15       |
| Rainfall                 | 0.20       | 0.32      | 0.11        | 6.3 (5)    | 1.49 (0.42)                    | 0.14       |
| Costs/Profits of farming | 0.20       | 0.29      | 0.13        | 10.2 (4) * | 1.43 (0.38)                    | 0.14       |
| Poor harvest             | 0.17       | 0.22      | 0.13        | 3.66 (3)   | 1.40 (0.44)                    | 0.12       |
| Health/illness           | 0.13       | 0.13      | 0.13        | 5.76 (3)   | 1.62 (0.38)                    | 0.08       |
| Socio-cultural           | 0.11       | 0.16      | 0.07        | 1.35 (3)   | 1.87 (0.26)                    | 0.06       |
| Soil fertility           | 0.10       | 0.16      | 0.04        | 1.33 (2)   | 1.47 (0.23)                    | 0.07       |
| Constrained livelihood   | 0.10       | 0.13      | 0.07        | 1.6 (3)    | 1.38 (0.44)                    | 0.07       |
| Livestock                | 0.10       | 0.21      | 0.00        | NA         | 1.97 (0.20)                    | 0.05       |

\*p<.05

This clustering of worries is visible in the Risk Map (Figure 6.1). In the lower left quadrant of the risk map, where reported worries are categorized as neither very frequent nor very severe, there are a number of worries. The upper left quadrant also contains a

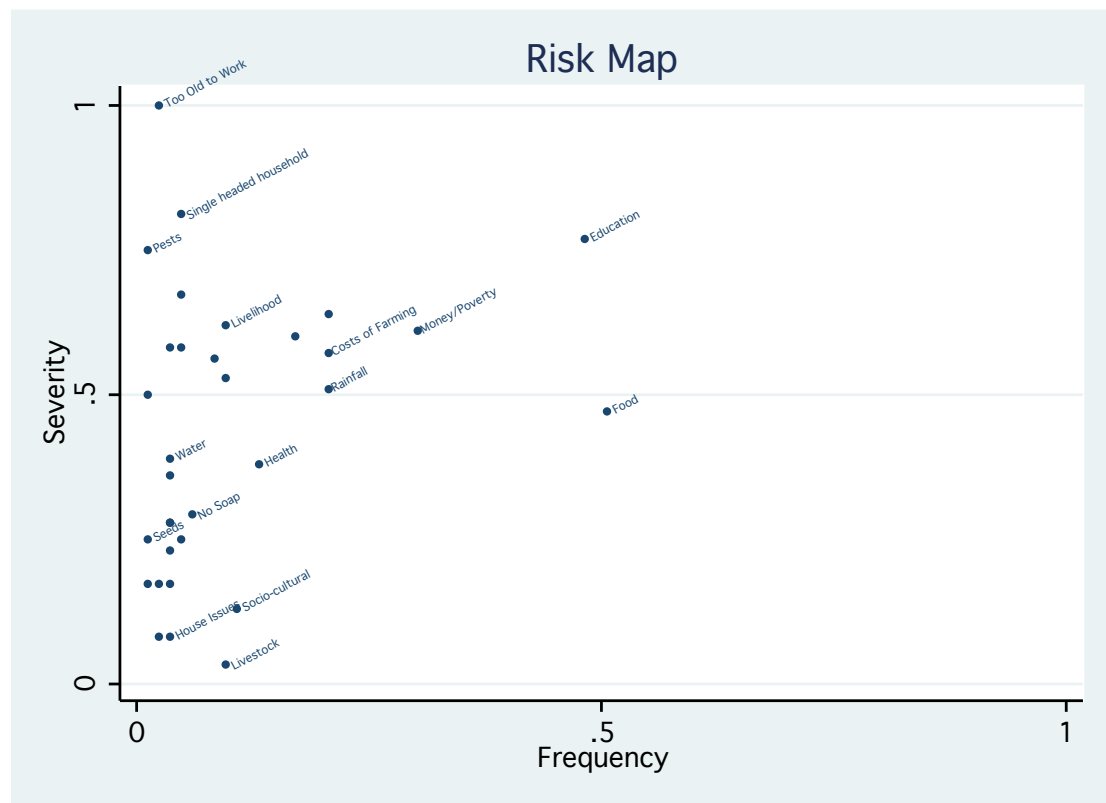
cluster of worries. In this quadrant, worries are infrequently mentioned but seen as more severe. What is clear in this map is the extent to which food and education were collectively viewed as two of the more pressing worries in this context. Education is the only factor that can be read as commonly perceived as severely risky. Food comes close to this categorization, but as the less severely ranked worry, it is more readily interpreted as a common but milder worry.

**Table 6.2: Frequency (<10%), Severity, and Risk Index (N=83)**

| <b>Factor</b>            | <b>Freq.<br/>Full<br/>Sample</b> | <b>Severity<br/>Full Sample<br/>Mean (SD)</b> | <b>Risk<br/>Index</b> |
|--------------------------|----------------------------------|---|-----------------------|
| Weakness/body pain       | 0.08                             | 1.44 (0.36)                                   | 0.06                  |
| No soap                  | 0.06                             | 1.71 (0.41)                                   | 0.04                  |
| Access to credit         | 0.05                             | 1.42 (0.50)                                   | 0.03                  |
| Poor shea nut harvest    | 0.05                             | 1.75 (0.29)                                   | 0.03                  |
| Single headed household  | 0.05                             | 1.19 (0.38)                                   | 0.04                  |
| Women's health           | 0.05                             | 1.33 (0.47)                                   | 0.04                  |
| Water                    | 0.04                             | 1.61 (0.35)                                   | 0.02                  |
| Electricity              | 0.04                             | 1.77 (0.25)                                   | 0.02                  |
| Problem with house       | 0.04                             | 1.92 (0.14)                                   | 0.02                  |
| Road                     | 0.04                             | 1.83 (0.29)                                   | 0.02                  |
| Illiteracy               | 0.04                             | 1.64 (0.38)                                   | 0.02                  |
| Health insurance         | 0.04                             | 1.72 (0.25)                                   | 0.02                  |
| Mental health            | 0.04                             | 1.72 (0.25)                                   | 0.02                  |
| Tractor service          | 0.04                             | 1.42 (0.23)                                   | 0.03                  |
| Women's work load        | 0.02                             | 1.83 (0.24)                                   | 0.01                  |
| No dam for dry season    | 0.02                             | 1.92 (0.12)                                   | 0.01                  |
| Too old to work          | 0.02                             | 1.00 (0.0)                                    | 0.02                  |
| Health clinic access     | 0.01                             | 1.83 (NA)                                     | 0.001                 |
| Access to improved seeds | 0.01                             | 1.75 (NA)                                     | 0.001                 |
| Drought                  | 0.01                             | 1.50 (NA)                                     | 0.001                 |
| Pests                    | 0.01                             | 1.25 (NA)                                     | 0.01                  |

Many of the factors frequently mentioned as bringing happiness (Table 6.3) parallel the factors that cause worry. For example, 15% of respondents indicated that having a good harvest brought them happiness compared to 17% of respondents who indicated that having a bad harvest brought them worry. And while 7% of respondents indicated that

improved livelihood opportunities were of benefit, 10% indicated that not having livelihood opportunities was a constraint.



**Figure 6.1: Risk Map for Tampiani 2012 (N=83)**

These parallels especially resonate with the most frequently mentioned factors of happiness. Food is the most frequently mentioned factor of happiness, with 35% of participants mentioning it. Just as people prevalently described worries over the costs of food or not being able to provide food for their household, having food was commonly expressed as something that brings happiness. Additionally, just as not being able to pay children's school fees was described as a worry, being able to educate children was also frequently mentioned (24%) as bringing happiness. Two of the most frequently

mentioned factors of happiness are not as readily associated with the most frequent worries. Though health related factors did appear as infrequently mentioned factors of worry, having good health (30%) was quite frequently mentioned as a factor of happiness.

**Table 6.3: Frequency of Reported Factors of Happiness (n=73)**

| <b>Factor of Happiness</b> | <b>Frequency</b> | <b>Factor of Happiness</b> | <b>Frequency</b> |
|----------------------------|------------------|----------------------------|------------------|
| Food                       | 0.35             | Producing/selling goods    | 0.07             |
| Health                     | 0.30             | Improving livelihoods      | 0.07             |
| Education                  | 0.24             | Married good spouse        | 0.05             |
| Unity                      | 0.23             | Nothing makes them happy   | 0.04             |
| Having children            | 0.16             | Good community             | 0.04             |
| Money                      | 0.16             | Good rains                 | 0.04             |
| Good harvest               | 0.15             | Going to church            | 0.03             |
| Providing for children     | 0.14             | Having grandchildren       | 0.03             |
| Solving problems           | 0.08             | The world is open now      | 0.01             |
| Livestock                  | 0.08             | Shea nuts                  | 0.01             |
| Farming                    | 0.08             | House                      | 0.01             |

Similarly, unity within a marriage or household (23%) was expressed as a factor of positive affect. In this context, unity is a concept commonly expressed as a relational quality of spousal or household connection. Unity means that spouses or households are able to talk about their problems and jointly solve them. In terms of how these data were categorized, unity also extends to an atmosphere in which household members have the mentality to sit and enjoy shared laughter.

Contextualizing these mapping exercises in local norms on socio-economic mobility shows that these factors of worry and happiness are quite relevant to how people make decisions about trying to improve their status in life. In looking at the economic



activities that were most prevalently mentioned as important to demonstrating upward mobility, from a status of doing “just ok” to “improving” (Table 6.4), farming endeavors, (both crops and livestock) prove important. Farming, however, is not the only important economic activity. It further proves important to have capital on reserve for reinvesting in a petty trading business. Additionally, from this method we learn that economic gains alone do not explain how households come to view themselves and be viewed by others as improving their status. Investing in children’s education through the Junior Secondary School level is indicative of onward improvement. This endeavor further proves to be one of the three most important factors cited as relevant for upward mobility, alongside the construction of a cement block house and farming five acres of maize.

Not surprisingly, the factors and activities that demonstrate upward mobility also, at a higher level, indicate achievement of a wealthy status. While cultivating five acres of maize indicates improvement, cultivating ten acres demonstrates wealth. Increasing the amount of capital from 500 GHS to 1000 GHS shows movement from a more middle class status to a wealthy status. Children who are able to extend schooling from Junior to Senior Secondary School are also demonstrative of a wealthy status. One of the more interesting signs of wealth is the factor of meal diversity. In this scenario, meal diversity was defined as three different meals a day for one week. Sixty-four percent of participants indicated this was something that wealthy households were able to do compared to 33% who said this indicated a middle class or “improving” status. Related to food are the items listed as enamel bowls. In this context, enamel bowls are important for serving food in a prestigious manner for special occasions or for guests. It was widely agreed by participants that owning 90 GHS worth of enamel bowls indicated an

“improving” status while owning 120 GHS worth of enamel bowls indicated a “wealthy” status.

**Table 6.4: Socio-Economic Sorting Frequency**

| <b>Factor/Activity</b>           | <b>Just Ok</b> | <b>Improving</b> | <b>Wealthy</b> |
|----------------------------------|----------------|------------------|----------------|
| Salary work 1000 GH/month        | 0.02           | 0.20             | 0.77           |
| 500 GH capital in trading        | 0.02           | 0.79             | 0.19           |
| 1000 GH capital in trading       | 0.02           | 0.13             | 0.85           |
| Own 5 cattle                     | 0.17           | 0.70             | 0.13           |
| Own 20 cattle                    | 0.00           | 0.08             | 0.92           |
| Own 20 goats                     | 0.02           | 0.80             | 0.18           |
| Own 50 goats                     | 0.01           | 0.11             | 0.88           |
| Farm 5 acres groundnut           | 0.02           | 0.90             | 0.07           |
| Farm 10 acres groundnut          | 0.00           | 0.12             | 0.88           |
| Farm 5 acres maize               | 0.01           | 0.90**           | 0.08           |
| Farm 10 acres maize              | 0.00           | 0.12             | 0.88           |
| Cement house in progress         | 0.12           | 0.62**           | 0.26           |
| Cement house completed           | 0.00           | 0.04             | 0.96           |
| Renting house                    | 0.00           | 0.05             | 0.95           |
| Seamstress made clothing         | 0.17           | 0.64             | 0.19           |
| 50 GH shop clothing              | 0.02           | 0.33             | 0.64           |
| Stuffed chair                    | 0.07           | 0.31             | 0.62           |
| Upgrading motorbike              | 0.06           | 0.71             | 0.23           |
| Motor tricycle                   | 0.00           | 0.19             | 0.81           |
| 90 GH enamel bowls               | 0.07           | 0.88             | 0.05           |
| 120 GH enamel bowls              | 0.05           | 0.08             | 0.87           |
| Charity in community             | 0.01           | 0.30             | 0.69           |
| Meal diversity                   | 0.04           | 0.33             | 0.64           |
| Children Junior Secondary School | 0.12           | 0.79**           | 0.10           |
| Children Senior Secondary School | 0.00           | 0.18             | 0.82           |

\*\*= identified as one of the 3 most important indicators of improvement

Despite the overwhelming number and kinds of worries that exist in this context, there is a rather resounding belief that life in Tampiani will be better in the future than it is now or was five years ago (Table 6.5). While the present and the past are perceived to both fall in the middle (with rankings of five out of ten), the future is predicted to be better than both the past and present, indicating a trend in hopeful thinking. T-tests

confirm that the anticipated future mean is different than the mean for either the present ( $t= 4.38, p=0.000$ ) or the past ( $t= 2.76, p=0.001$ ).

**Table 6.5: Ladder of Life Ranked on Scale of 10(N=30)**

|                  | Mean | SD   | t (df)<br>(testing future) |
|------------------|------|------|----------------------------|
| Present Rating   | 4.9  | 3.27 | 4.38 (28)**                |
| Past (5 years)   | 5.0  | 3.36 | 2.76 (28)*                 |
| Future (5 years) | 6.9  | 3.17 |                            |

\*\* =  $p<0.001$ , \* =  $p<0.01$

## Discussion

To return to the primary objective of this study, to consider if access to food is something that people in these field sites worry about, results indicate that access to food is something that people express as worrisome. However, food is not necessarily the most severe worry. Taken as a whole, these data allow me to assert that access to food and education were the most pressing risks in these field sites. By additionally contextualizing these mapping exercises in perceptions of socio-economic status and mobility, I can draw certain conclusions about why these two factors were perceived as the most pressing risks.

That the costs associated with education emerge as the highest category on the risk index is a finding that diverges from other risk mapping studies. Whereas Smith and colleagues (2000) found education to be a severely indicated worry, the overall risk index value of education was not as strongly indicated among East-African pastoralists as it is in this study. Throughout my fieldwork, complaints about the costs associated with

education surprisingly and consistently intersected with the complaints about food insecurity I was intentionally seeking. Even though primary school fees are subsidized in Ghana, the costs associated with schooling children dominated conversations about how households allocate their money. There are fees for students to take exams, uniforms are required, and it is very common for schools to institute parent teacher organizations that require paying dues. In inquiring about why school fees are a bigger concern than food, one woman explained that she never knows when children are going to ask for money for school. She felt that she had more control over meeting food needs because she could anticipate shortfalls in the household food supply and coordinate her income earning accordingly. Fees associated with schooling, however, were perceived to be more unpredictable in terms of timing and amount.

Though a comparative perspective of this particular method situates school fees as an unusually pressing worry, that education emerged as a worry should not be so surprising. Several recent ethnographies that detail longitudinal environmental, economic, and social change in Indonesia make passing, but strong reference to the importance of education for populations facing similar ecological and economic instability (Li 2014; Tsing 2005). Additionally, the pressure of school fees on households in northern Ghana is empirically established. Research from the Upper East Region finds that children are often pushed into small-scale mining work to fund their schooling (Hilson 2010). Such instances were noted in my own fieldwork endeavors. One of the jarring incidents of my experience as a long-term fieldworker was learning that a young adolescent with whom I spent many evenings reading books, and who had

just proudly entered junior secondary school, had run off to a local small-scale mining camp.

The relevance of this finding about perceptions of education also maps onto African political discourse in an interesting way. Across the continent, subsidized secondary schooling has received heightened political attention even as studies show that subsidization policies do not always enact equitable access (Ohba 2011). A major platform for Nana Akufo-Addo's campaign as the National Patriotic Party's candidate for the 2013 presidency in Ghana was the subsidization of secondary schooling.

Compared to other studies that have conducted this risk mapping exercise, it is not as surprising that food emerged as a frequent but milder worry. Food is a worry consistent across several different studies across Africa (Bunting et al. 2013; Smith et al. 2000; Tschakert 2007) and in Ecuador (Lu et al. 2014). From this study, it is important to emphasize that concerns over food access can be interpreted as a more prevalent and severe concern than were the means of cultivating food. That agricultural factors such as cost of inputs, rainfall, and access to improved seeds are lower ranked worries indicates that food concerns are more oriented in economic marginalization rather than agro-ecological constraints. In other words, people expressed worry over insecure entitlements to food rather than agricultural insecurity. I argue that because concerns over food accessibility are more pressing than the various factors that can constrain its production underscores that entitlements to food precede concerns over growing food. This argument gains strength when aligned with the finding that accessibility of education is the most worrisome factors of life in this context and money, the factor that enables access to both food and education, the third most pressing worry.

By extending this study to look at the circumstances that bring happiness, I found a lot of commonalities between worry and happiness. That many of the circumstantial factors of worry are, in the converse scenario, reported as something that can bring positive affect strengthens the case that these subjectivities are quite contextually relevant to quotidian life. It is unlikely that people would worry over something that they saw as immutable or perceive of happiness in terms of things that are impossible to achieve. Furthermore, by looking at how happiness integrated into lives, it becomes possible to demonstrate how these negative and positive affective responses are ultimately connected to a sense of holistic well-being.

Food presents such an analytic opportunity. It is necessary to recognize that in categorizing food, much of the nuance of the worry is lost. For example, several people mentioned having a “full stomach” as an indicator of happiness. Another respondent mentioned that what made them happy was when there was *good* food in the house. This is similar to another sentiment regarding that happiness resulted when there was food in the house and everyone was eating. Perhaps an even more telling statement came from a man who said that when there is good food to eat he has health and therefore has the confidence to perform his duties well. These commentaries provide qualitative indication of the particular ways in which food was associated with happiness (and presumably cause worry) as well as the multi-dimensional ways it can contribute to well-being, ultimately speaking to the findings of the previous chapter.

There is also a lot to be said for the factors of happiness that did not appear as a factor of worry. Whereas a lack of unity (social and emotional cohesion) does not appear in the risk mapping data, it does appear as an indicator important to positive affective

wellbeing. This finding brings attention to the necessity of comprehending vulnerable populations in holistic affective terms, and not just in terms of worry or distress. This further indicates that it is not just enough to have more material items or improved livelihoods, but to feel and enact the benefits of these life enhancements. That it is viewed as important for a household to come together and laugh or show mutual support to one another demonstrates how, what Hanrahan (2015) refers to as an “ethics of care” contributes to a sense of wellbeing. As found by Eggerman and Panter-Brick’s (2008; 2010) research from Afghanistan, the maintenance of important moral codes and social orders can make households resilient to the stressors of a politically and economically violent context.

When framed against the history of these communities and the current economic and ecological dynamic of the region, it is not surprising that households were more concerned about educating their children than they were about becoming more technologically efficient farmers. As this peri-urban region faces ongoing and rather rapid socio-economic change, the visibility of the institutions and processes that denote entrance into the formal wage sector become more prominent. Just a generation ago, primary schooling was not available in these communities. Adults in these communities understand quite well how their own lack of education has constrained their livelihood opportunities. Being illiterate eliminates formal sectors job opportunities such as civil servant and relegates one to low paying opportunities such as day labor. With a primary school now located in both communities, their children are positioned to be able to attend junior and senior secondary schools in the nearby regional capital as well as the local university.

This finding, I argue, positions rural populations as concerned about and invested in their futures. Such results strongly indicate that this population is perhaps more invested in minimizing future risks than more immediate risks. In the risk mapping exercise it was commonly self-reported that school fees were the most pressing worry because when children are able to go to school, they are able to help their families in the future. One woman lamented that if you do not send your children to school it is like you do not even have children.

From the ladder of life exercise, the general consensus for why the future will be better is acknowledged through the importance of educating children because, as echoed in the commentary delivered during the risk mapping exercise, an educated child is one that can attain a better job and extend assistance to the family. Whereas studies from behavioral economics suggest that scarcity effects cognitive ability, particularly the ability to make sound investments in the future, this research finds that scarcity is not impeding the perception of the importance of investments in the future. As results from the following chapter indicate, scarcity is not impeding the actual investment in education.

In considering this nexus of food concerns and education, there is an important contribution to ongoing studies of how populations throughout semi-arid West Africa are and will continue to cope with a changing climatic context, especially as it relates to their agricultural involvement. That education is seen as the most pressing concern because it can facilitate a more financially stable future brings forward an important consideration of how local populations actually engage with the threat of a climate they quite readily acknowledge as changing and influencing their agricultural productivity. This finding



echoes the findings of other research conducted in the region. Nyantakyi-Frimpong and Bezner-Kerr (2015a), van Der Geest (2011), and Tschakert (2007) find that climate change is but one concern faced by small holders and emphasize addressing climate change as but one of many issues. It further resonates with Nightingale's (2015:204) assertion that if resilience is to be a useful heuristic in climate change policy, it needs to be framed in a manner that values local people's own understandings of flexibility, adaptation and livelihood security.

At the same time, it is important to note that worries about agricultural production, though minor, are present. People mention concerns about rainfall patterns, pests, soil conditions, and the overarching financial cost of contending with these constraints. As evidenced in the socio-economic ranking exercise, people envision successful futures through an ongoing participation in agricultural activity. I suggest that this is the case because despite the urbanization of the immediate region and the threats of climate change, agriculture is seen as a viable activity to maintain in the livelihood portfolio. Food prices remain volatile throughout Ghana and having access to land and inputs to grow one's own food is likely to remain a priority for households. It is not uncommon for individuals employed in salaried work to continue to grow the majority of their food. A friend employed with a local NGO hired people to cultivate a five acre maize plot for his family in 2014. Even with the employment of the farm workers, the costs were more minimal than relying on food purchased at market. Ultimately, it is likely that households see a diversified livelihood portfolio that includes, but is not completely reliant on agriculture, as the way to proceed through their contextual uncertainty.

## **Conclusion**

This study expanded the usage of the participatory risk mapping method by uniting it with other subjective assessments of socio-economic status for deeper analysis. I assessed why subjectively perceived risks for rural smallholders may explain not just the structure of risks, but also the temporality of those risks and the coping mechanisms employed to manage a vulnerable socio-economic and socio-ecological context. Results from this study demonstrated that education is the most pressing worry in this context, surpassing the more widely addressed problem of food insecurity. I argue that education is a most pressing worry because it is viewed as a vital for coping with livelihoods limited to agricultural production or other subsistence level economic activities. This finding indicates that future welfare is perhaps more integrated into daily decision making patterns than the rural poor are often accredited with. This finding further speaks to an overarching need for more research to include the costs associated with the achievement of formal education, as a tool of social capital, in the broader conversation about poverty and well-being.

These findings have important implications for an interventionist discourse that is predominantly generated by agricultural development policies and programs. As already stated by researchers embedded in northern Ghana, what is perhaps a more relevant mode of intervention are policies and programs that enable and elevate diverse livelihood opportunities rather than the intensification of a strictly agricultural portfolio (Hesselberg and Yaro 2006; Tsakert 2007; Whitehead 2002; Yaro 2013). Even in the face of climate change, and perhaps because of it, localized concerns about poverty and security should

be understood and addressed as issues of improved and diversified livelihoods, rather than strictly as problems of improving enhancing agricultural capacity.

## **CHAPTER 7**

### **THE FOOD INSECURITY AND MENTAL HEALTH RELATIONSHIP: HOW DISCREPANCIES IN GENDERED ECONOMIC NORMS CONTRIBUTES TO DISTRESS IN UPPER WEST GHANA<sup>19</sup>**

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<sup>19</sup> Ham, Jessica. To be submitted to *Medical Anthropology Quarterly*.

## **Abstract**

This chapter explores the relationship between food insecurity and mental health through analysis of the gendered food economy. Increasingly, research shows that food insecurity predicts poor mental health outcomes within both subsistence and industrialized economies. What remains unqualified are the particular pathways by which food insecurity predicts poor mental health outcomes in diverse settings. By looking at gender norms and relations within a particular system of food procurement and utilization, it is possible to make this clarification. I draw on seasonal quantitative and qualitative data from 12 months of data collection in 2 neighboring field sites in the Upper West Region of Ghana to construct a random effects model that shows how gender norms and relations differentially effect men's and women's mental health as related to food insecurity. This modeling technique shows that while women may be more inclined to feel burdened by their increasing work load, especially because they are increasingly responsible for food procurement, men are likely to feel burdened by their inability to contribute to the household food economy because of constrained farming conditions.

## Introduction

During a break from fieldwork in March 2014, with eyes glued to apps diffusing news and updates from my smart phone, I read a BBC story that set the following scene on gender relations in a village in neighboring Burkina Faso: “While the men appear to sit around in the heat all day, the women fetch and carry water in tin basins and grind the local staple, millet and sorghum, for the daily meal” (Lloyd-Roberts 2014). While such decontextualized notions of gender relations in Africa had always triggered my annoyance, reading a story that perpetuated a stereotype about lazy men whilst in the field collecting data on how food insecurity indiscriminately influenced the affective states of men and women shifted my affective response to analytical action.

Contextualizing and combatting this standardized narrative of gender relations in Africa became the grounding analytical point for my assessment of food insecurity and poor mental health outcomes.

During fieldwork, in communities that sit approximately 400 kilometers to the east of the one in the BBC story, I routinely joined groups of these “idle” men for tea and talk about their role as food providers. My integration into these intimate social spaces equipped me with ethnographically situated data that explained these behaviors not as lazy, but as therapeutic. I knew that men gathered for collegiality and for catharsis. They gathered to talk about their worries—about their inabilities to be successful farmers because of ecological conditions and a lack of financial resources. They gathered for advice on how to deal with agricultural constraints and for time to laugh over the vagaries of a farmer’s lot. I further knew that the areas where women gathered to conduct their domestic work held similar social value. Locations such as the borehole were symbolic

of the drudgery of women's work, but were also clearly spaces where women sought advice from and laughter with their friends.

And while I witnessed and heard about frustrations and contentions between husbands and wives, I learned about collective work that demonstrated ways to work around gendered livelihood constraints for common household goals. I knew that many men cared enough about providing for their families that they clandestinely engaged in income earning activities located in the purview of women. We heard rumors about a man who made charcoal, a transgression that my research assistant assured me could result in repercussions from traditional authorities. Without pressing this man about whether he was involved in this act, he confirmed the rumors, stating that he cut the trees and tended to the firing process, but gave the bags to his wife to sell for him so that he could buy fertilizer for his maize farm. We learned of another man who, because he had taken an advance on his salary as a security guard to repair a wind-damaged roof, assisted his wife in the collection, transport, and sale of shea nuts so that they could jointly purchase maize for their household. The wife of this man tellingly surmised that men were not necessarily uncaring in their compromised states as caretakers, but were more secretive in how they dealt with that stress.

Given this empirical grounding, it seems very unlikely that men, as a collective category, are not affected by distress related to the experience of food insecurity. Indeed, gendered analysis of standardized food insecurity instruments indicates that men and women have different psychological responses to the experience of food insecurity (Coates et al. 2010). Despite this, much of the research exploring the effects of food insecurity on mental health incorporates gender not as a means to explore how men and

women might differentially experience distress, but to underscore women as more severely burdened by food insecurity (Carter et al. 2011; Tsai et al. 2012).

While gendered discrepancies in the severity of mental health are important to recognize, such analysis does not work to identify why food insecurity may result in poor mental health. Studies that emphasize women as more burdened by food insecurity and distress ignore the need for gender to be contextually and relationally considered (Jackson 2000; Whitehead 2000). They additionally dilute the ability to understand the causes of distress, instead placing more proximate blame on local enactments of economic activity rather than the policies and practices that structure food accessible or inaccessible. By de-emphasizing the effects on men, there is room to assume that food insecurity is stressful because the burden of food provisioning falls on women. This ignores the ways that men do or desire to contribute to household food needs or how food insecurity, as an experience encapsulating more than household economic responsibility, may otherwise influence both men and women.

While a few studies have used gender relations as a basis by which to explore how food insecurity (Nanama and Frongillo 2012) and water insecurity (Wutich 2009) can result in ill mental health, gender remains a minor point anchoring analysis in this body of research. This study therefore proposes to investigate how gendered household economic duties associated with food insecurity are implicated in ill mental health outcomes. I draw on extensive research from scholars using the tools of political ecology to show how gendered economic opportunities and constraints do not exist in isolation from environmental conditions or the local or global political economy that shapes the ways that livelihoods in West Africa are either elevated or marginalized (Abdul-Korah



2011; Carney 1993; Carr 2008; Davidson 2012; Hesselberg and Yaro 2006; Overa 2007; Schroeder 1993). This approach is taken in order to refine understanding of how and why both local and global forces of environmental and economic change can influence the means by which men and women are able to procure food and other intersecting needs for the household.

Taking guidance from these studies, I propose that both men and women experience distress associated with food insecurity, but through pathways that are likely different. In this way, this chapter further works to dispel the myth that men are lazy and to further explain how and why women may be overworked. I contribute to this discussion through exploration of panel survey data measuring levels of food insecurity and mental health. I apply an analytical framework that focuses on the intersections of the structural forces that cause food insecurity and the local means of knowledge production and relational ontologies of managing food insecurity that converge in what geographers Jessica and Alison Hayes-Conroy (2013: 85) call the affective body. To employ this theoretical framework, I use ethnographically situated knowledge on gendered norms and expectations to inform the construction of random effects regression models that explore how these gendered economic expectations and engagement in activities may result in a variable experience of distress in this food insecure context.

### **Mental Health, Food Insecurity, and the Gender Gap**

As attention to mental health has grown within the global health paradigm, anthropological concern has importantly centered on how to address projected morbidity without medicalizing illnesses that have wide-ranging symptomologies (Bemme and D'souza 2012; Kleinman 2012; Kohrt et al. 2014). However, there is also increased

focus on how and why environments shape these particular health outcomes. A broad avenue of such research builds off of epidemiological studies that outline a pattern whereby increased food insecurity is associated with an increase in poor mental health (Sorsdahl et al. 2011). Smaller, ethnographically oriented studies have also found positive relations between food insecurity and anxiety in rural, subsistence contexts in Africa (Cole and Tembo 2011; Hadley and Patil 2008). Such findings are further substantiated by research that shows, conversely, that being food secure results in a greater chance of expressing subjective measures of well-being such as happiness (Bull 2010; Tsai and Senah 2013)

Anthropological engagement currently focuses on how to understand the causal pathways by which being food insecure results in ill mental health (Weaver and Hadley 2009; Wutich and Brewis 2014). Several authors propose that the pathway could be one stemming from the worry or anxiety women experience in being able to provide or manage food or water in an uncertain context (Hadley and Patil 2008; Wutich 2009). Other studies underscore how social relations play a role. In Ethiopia, research shows that integration into strong social networks helped buffer individuals from distress during the 2008 food crisis (Maes et al. 2010). In Burkina Faso, findings suggest that food insecurity itself is not the distressing effect, but rather a mechanism by which intra-household cohesion is disrupted (Nanama and Frongillo 2012). Stigma, too, is a proposed pathway. Weaver and colleagues (2014) look at how the inability to purchase and consume foods locally construed as prestigious in Brazil results in symptoms of anxiety.

The emotive pathways resulting from stigma present interesting and telling avenues for determining the ways in which men may be affected by insecure access to

food. A study in Burkina Faso suggests that men experience distress because they are not able to produce enough grain for their households due to changing rainfall patterns. This is proposed to leave men feeling guilty and ashamed (Nanama and Frongillo 2012).

Similarly, in her analysis of why water insecurity results in negative affective states in men and women, Wutich (2009) finds that men express distress over their inability to fulfill their role to financially provide enough water for the household.

Both of these studies build off of a robust body of research detailing how the ability or inability to enact constructions of masculinity through socio-economic responsibilities contributes to men's psychological well-being (Jackson 2000; Whitehead 2000). As stated by Cecile Jackson (2000: 12):

Rather than assuming that men have time on their hands and perpetuating the unexamined idea of the lazy man, it is necessary to revisit notions of invisibility, work definitions and the exclusions they manifest, and to introduce an embodied understanding of work in which discourses of male strength are not dismissed as gender mystification but investigated for what they might reveal about changing gender relations and the distribution of well-being.

Studies engaging this perspective have found suicidal behaviors affiliated with men in the United States during the economic fallout of the 1980s farm crisis (Ramírez-Ferrero 2005) as well unemployment in Ghana (Adinkrah 2012). Inability to cope with a changing ecological and economic landscape for farming has been linked to alcohol abuse by men in northern Ghana (Luginaah and Dakubo 2008). While the food insecurity and distress research paradigm has done well to draw from a body of research that importantly indicates that women associate their work loads with emotional distress (Avotri and Walters 1999, 2001), connecting to studies that show how the socio-

economic positioning of men is tied to both food production and food accessibility opens more exhaustive analysis.

### **Gendered Economic Activities in the Research Setting**

A World Food Program (2009) finds that 33% of the northern population in northern Ghana is chronically food insecure (Biederlack and Rivers 2009). A follow up survey in 2012 demonstrates that there is a strong degree of variability in food insecurity throughout these most food insecure regions, indicating that causes of and reactions to food insecurity are also quite variable (Hjelm and Dasori 2013). Economically, the two communities that are the sites of this study are located on the fringes of the regional capital Wa, an expanding urban center. As such, in these field sites both men and women have higher income earning opportunities through engagement with the formal market sector. Men have income earning opportunities through day labor in construction. Women are gaining higher income earning opportunities through the trading of local commodities such as yam, tomatoes, rice, charcoal, and shea nuts. Trading is acknowledged as a more viable livelihood for meeting the need for cash that accompanies integration into a liberalized national economy<sup>20</sup>.

Geographically, this region is positioned in an ecological zone that buffers the Guinea Savanna to the south and the Sudan Savanna to the north. There is one rainy season that begins in April/May and continues through the end of October. Agriculture is constrained by changing rainfall patterns. Historically there is a great deal of temporal variability in annual rainfall in the region. Local populations in this field site, and in other

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<sup>20</sup>Throughout Ghana, researchers have specifically identified the effects of the structural adjustment agreements in the 1980s as a point in the recent past that increased women's workloads, especially their transition into balancing domestic work with income earning to cover health care and education costs (see Avotori and Walters 1999; Chalfin 2004; Naylor 1999; Overa 2007).

local communities, recognize that what is currently undergoing a transition are the consistent rains that enable planting (Nyantakyi-Frimpong and Bezner-Kerr 2015a). Additionally, soil fertility is perceived to be declining due to tree harvesting and more intensified and continuous cropping (Devereux 1993; Nyantakyi-Frimpong and Bezner-Kerr 2015a).

Small-scale agricultural production remains the predominant livelihood activity in these communities even though there is increased involvement in the formal market sector. Most households farm between five and 10 acres of mixed crops. Most farmers grow a mixture of maize, millet, sorghum, cowpea, Bambara groundnuts, and white yam for subsistence purposes. Groundnut is the most widely grown cash crop (Quaye 2008).

Despite the growing constraints posed by the changing rainfall patterns and declining soil quality, maize remains one of the most important crops in local economic practice. Unlike other crops, growing maize requires the timely and sufficient application of inorganic fertilizers in addition to the cost of seeds, labor, and plowing services. In 2014, a 50 kilogram bag of NPK fertilizer cost approximately 90 GHS (\$30). Maize is emphasized for its short maturity time as well as for certain aesthetic qualities that are enjoyed in the staple porridge (see Chapter 5).

Men's and women's social and economic duties are culturally categorized, with the terms *pominga* and *dominga* referring not only to these gendered duties, but also to the women and men who possess the characteristics that make ideal leaders (Bernhends 2002). In this socio-cultural context, men are considered the farmers and household heads. As such, they have primary access to both land and household labor (Naylor 1999; Whitehead 1984). With this role, they are responsible for producing food for their

household as well as surplus crop that can be sold for income. If insufficient supply is produced, they are responsible for buying the necessary food. If they are unable to fulfill that role they call upon the assistance of their wife. As past ethnography from the region detail, this may be a situation indicative of stigma. Goody (1962) notes that the food a wife is able to acquire through her own means is viewed as conceptually quite separate from the grain that a husband gives to a wife. This finding is supplemented by Devereux (1993) who finds that in the neighboring Upper East region, men will turn to outside sources for loans to buy food before asking their wives for assistance. Besides farming, men can raise money by selling livestock or by selling their labor to work on another farm.

Women are responsible for helping plant and harvest crops on their husband's farm and are managers of the household food economy. Women must provide the vegetable, protein, oil, and seasoning ingredients for the soup that accompanies the cereal based staple. Additionally, women are responsible for preparing the right amount of food for the household and meeting particular household tastes (Padmanabahn 2007; Whitehead 1981). Access to income is available to women through the collection, processing and sale of wild resources—largely fuel sources such as firewood and charcoal, but also local food ingredients such as shea butter. Domestic care, including taking care of the children and the house, is also relegated as the role of women.

## **Methods**

This study uses a longitudinal design to look at how gendered economic roles in the food and household economy intersect with the relationship between food insecurity and mental health. Two seasons of preliminary research in 2011 and 2012 structure the

methods employed during the primary period of data collection in 2014. Primary data collection occurred between January 2014 and January 2015. A sample size of 148 men and women were recruited from two neighboring communities in the Upper West Region. These 148 individuals represent paired household heads, with the senior wife selected for participation in polygynous households<sup>21</sup>.

A quantitative recall survey composed of three different modules was implemented three times (March, July, October 2014) to report on the previous month's experiences with food insecurity, distress, and economic activity (see appendix). This survey was translated from English into Wale by one research assistant and then translated back into English by another research assistant to ensure linguistic integrity and consistency. The author and a research assistant participated in all interviews. All members of the sample were approached for all three rounds of the surveying, but availability for all participants varied season to season. 82% of the sample was surveyed in the first iteration, 93% in the second and 96% in the third.

The food insecurity module (Module 1) is composed of 8 questions inquiring about the individual perception of household food availability and management in the previous month. It is based on the Household Food Insecurity Access Scale. Informant responses were coded according to the number of times the factor was experienced in the previous month (1 for 1-2 times, 2 for 3-10 times and 3 for 10 or more times) with a total score of 24 possible. With this scheme, the higher the score, the more food insecure the individual is.

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<sup>21</sup>18 participants (12% of the sample) represent either solely headed households, or households where a partner declined to participate in the study.

Based upon findings from similar studies conducted in rural Africa (Pike and Williams 2006), I used a modified and pared down version of the Hopkins Symptom Checklist (HSCL) to acquire a standardized and valid measurement of mental health (Module 2). The version reported here is composed of 14 symptoms (five psychological, seven somatic, and two cognitive). The selection for symptoms that are used is based on the semi-structured interviews conducted in 2012 on a local illness known as *teeha /sikiri baalong* (worry sickness). For 13 of the 14 symptoms responses were reported using the same Likert scale as the food insecurity survey, with the remaining question coded as yes/no<sup>22</sup>. The maximum score for this instrument is 40, with higher scores indicative of a more severe burden of distress. Module 3 is composed of questions that tracked seasonal participation in economic activity. These questions included: 1) whether any food was purchased in the past month, 2) if, and how, any income was earned and 3) if any school fees were paid and how much was spent.

Additional data reported on here are pulled from surveys about agricultural participation that account for varieties of crops grown and acreage as well as participation in agricultural and non-agricultural labor during the agricultural season. From the agricultural surveys, acreage of maize grown was isolated as a variable of interest to represent agricultural participation. Maize is selected because it is a crop that most households cultivate at least one acre of and because of the extra fertilizer costs associated with its cultivation. Acreage of maize grown was accounted for in the 2013

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<sup>22</sup>While some of the symptoms that appear on this survey are very similar to the HSCL, others are contextually relevant to worry sickness. For example, one symptom of worry sickness is losing weight. This kind of weight loss was expressed as unique from weight loss experienced due to diet and is perceived as resulting from the process of “too much thinking” about ones worries. Effort to avoid over-reporting certain symptoms was accounted for. If participants responded yes to the symptom of frequent headaches, further probing sought the cause of the headache so as to avoid reporting headaches associated with other illness or working too long in the sun.



and 2014 agricultural cycle. 2013 data were collected in a onetime recall survey early in 2014, 4 months after maize was harvested. 2014 acreage was collected at the time of cultivation and then reconfirmed when yield data was gathered.

Over the course of 17 weeks during the agricultural cycle (between June and December) surveys on the allocation of agricultural and non-agricultural labor were conducted. Men who engaged in formal wage work at least three times over the course of these 17 weeks were coded as higher wage earners. Women who participated in petty trading at least three times were coded as higher wage earners. Basic demographic data for all households was also acquired through a household survey and all study participants were coded as either living in a nuclear or extended family dwelling. Ethnographic methodology, including observation and informal conversations were an additional construct of this research and these data inform analysis and discussion.

## **Results**

In interpreting food insecurity and distress survey scores I examine continuous variation in scores rather categorizing participants as “food insecure” or “distressed.” The pooled data from the food insecurity and mental health instruments achieved Cronbach’s alpha (0.83 and 0.80) indicative of strong internal consistency of the survey instruments. As seen in Table 7.1, median food insecurity (7 out of possible 24) and distress scores (11.5 out of a possible 40) are highest in the March iteration. Both scores decrease over the following two iterations, suggesting a decrease in food insecurity and reduction in distress from March onwards.

Regression models show that food insecurity scores are important predictors of distress. When all of the survey iterations are accounted for, median food insecurity

survey scores explain 37% of the variation in distress scores. From a seasonal perspective, regression results decrease over time.

**Table 7.1: Median Food Insecurity and Distress Scores, Bivariate OLS Regression**

|                             | March        | July       | October  | All Waves |
|-----------------------------|--------------|------------|----------|-----------|
|                             | N=121        | N=137      | N=142    | N=400     |
| Median Food Insecurity (IV) | 7 (2, 13)    | 4 (2, 7.5) | 0 (0, 2) | 3 (0, 7)  |
| Median Distress (DV)        | 11.5 (6, 17) | 8 (4, 12)  | 5 (2, 9) | 7 (3, 13) |
| Beta                        | 0.72         | 0.78       | 1.13     | 0.79      |
| Adjusted R <sup>2</sup>     | 0.36*        | 0.29*      | 0.16*    | 0.37*     |

\*p<.0001, (25<sup>th</sup> and 75<sup>th</sup> percentiles in parentheses)

In March food insecurity survey scores explain 36% of the variation in distress scores, but by October this decrease to 16%. This suggests that the higher the food insecurity scores, the more predictive they are of distress scores.

Table 7.2 shows summary statistics for participation in economic activity (Module 3) by gender and shows that there is variation in these activities across seasons as well as substantial participation by women in activities that are culturally ordained as the responsibility of men. Buying food is one of the most noticeable activities indicative of this trend. In the March, July, and October iterations of the surveying, 47.0%, 51.4%, and 27.1% of women reported buying food for the household despite this being the role of men in this socio-economic context. Men also reported buying food for their households. At 32.8%, fewer men reported buying food than women in the October

iteration, but in July (53.8%) and January (31.0%) iterations, men more frequently report buying food than women.

**Table 7.2: Summary Statistics for Time Variant Economic Activities (By Gender)**

| Variable                            | March           | July            | Oct.            |
|-------------------------------------|-----------------|-----------------|-----------------|
|                                     | <i>% sample</i> | <i>% sample</i> | <i>% sample</i> |
| Men buying food                     | 32.8            | 53.8            | 31.0            |
| Women buying food                   | 47.0            | 51.4            | 27.1            |
| Men earning money                   | 58.6            | 66.1            | 80.3            |
| Women earning money                 | 89.4            | 70.0            | 77.5            |
| Men school fees (“low” 1- 50 GHS)   | 46.6            | 51.6            | 16.2            |
| Women school fees (“low” 1- 50 GHS) | 34.8            | 41.4            | 14.9            |
| Men school fees (“high” 51+ GHS)    | 32.7            | 17.1            | 33.9            |
| Women school fees (“high” 51+ GHS)  | 25.7            | 11.5            | 5.9             |

The trend for women to be involved in meeting household needs carries over to school fees as well. Even though school fees are locally construed as the economic responsibility of men, men and women both contribute to these household costs. Women report paying school fees at both the low (34.8%, 41.4%, 14.9%) and high levels (25.7%, 11.5%, 5.9%) in all 3 survey iterations. Men are also documented as contributing to school fees, with higher frequencies than women for both low (46.6%, 51.6%, 16.2%) and high (32.7%, 17.1%, 33.9%) levels of school fees.

Men and women report earning money throughout all three iterations, demonstrating that there is quite frequent involvement in an activity dually expected of men and women. Participation by women is lowest in the July iteration at 70.0%. Participation by men is lowest in the October iteration at 58.6%. Women are more

involved in income earning in March (89.4%) and July (70.0%) but by October, participation by men (80.3%) is greater than that of women (77.5%).

Table 7.3 presents results from agricultural surveying as well as the demographic surveying. Perhaps demonstrative of a trend in household organizational patterns that are shifting away from extended family cohabitation, nearly half of all women in the sample live in a nuclear household, meaning that nearly half live in extended household units. Slightly more than half of the men in the sample live in nuclear households indicating that slightly less than half live in extended household units.

While Table 7.2 indicates that men and women were highly involved in some form of income earning activities over the course of the year, fewer are involved in the formal sector, where earnings are higher. Approximately a third of the men in the sample (32%) were engaged in some form of wage labor work at least 3 times during the agricultural season. A more minor percentage of women (19%) were engaged in trading at least 3 times during the agricultural season. On average, maize accounts for 21% of the crop portfolio for households in the study population. This means that 80% of acreage is devoted to other important crops such as yam, beans, groundnuts.

**Table 7.3: Summary Statistics for Time Invariant Economic Indicators**

| Variable                          | % sample      |
|-----------------------------------|---------------|
| Women living in nuclear family hh | 48.0          |
| Men living in nuclear family hh   | 56.3          |
| Men formal economy                | 31.8          |
| Women trading                     | 18.9          |
| Maize acreage (mean)              | 21.0 (SD =.6) |

Due to the seasonal nature of these data and the intent to examine how distress can be explained through the gendered household economic responsibilities that are

related to food insecurity, multivariate regression models are built using the variables explored in Table 2 and Table 3. Random effects modeling was selected to account for variables that are consistent across time (Table 7.3) as well as variables that change over time (Table 7.2). Models were developed in a forward stepwise manner. The addition of variables is guided by knowledge of household needs including, but not limited to food, as well as how those needs can be met. For example, because cultivating food for the household is the first step to achieving food security, maize is one of the first variables added to the model, before earning money or buying food. Abbreviated models are presented, including variables that are not statistically significant. The model presented in Table 7.4 includes food insecurity as the independent variable. The model presented in Table 7.5 excludes food insecurity.

Model 1 (Table 7.4) accounts for 35% of the variation in distress scores for men and 49% for women. Several variables result in similar experiences of distress for men and women after controlling for other variables. There is a negative and statistically significant relationship between living arrangements and distress scores. Living in a nuclear household decreases distress scores for both men ( $\beta = -1.82$ ) and women ( $\beta = -2.67$ ) compared to those who live in an extended family compound. For men who live in a nuclear household distress scores decrease on average 5%. For women, this household dynamic results in approximately a 7% decrease in distress. There is a positive and statistically significant relationship between food insecurity scores and distress scores for both men ( $\beta = 0.63$ ) and women ( $\beta = 0.67$ ). For every one point increase in food insecurity scores for men and women, distress scores increase on average 2%.

**Table 7.4: Abbreviated Random Effects Models (With Food Insecurity)**

| Model 1                                   | Men<br>$\beta$ (SE)     | Women<br>$\beta$ (SE)   |
|---|-------------------------|-------------------------|
| Food insecurity score                     | <b>.63 (.07) **</b>     | <b>.66 (.09) **</b>     |
| Nuclear household (0=no, 1=yes)           | <b>-1.82 (.86) *</b>    | <b>-2.67 (1.03) **</b>  |
| Ratio maize grown                         | .57 (2.99)              | -4.56 (3.33)            |
| Individual buys food (0=no, 1=yes)        | -.65 (.71)              | 1.18 (.86)              |
| Women's trading (0=no, 1=yes)             | .72 (1.06)              | -1.73 (1.33)            |
| Men's formal econ. (0=no, 1=yes)          | .71 (.92)               | 1.43 (1.13)             |
| Low school fees (0=no, 1=yes)             | 1.05 (.74)              | <b>2.44 (.87) **</b>    |
| High school fees (0=no, 1=yes)            | <b>1.75 (.81) *</b>     | <b>2.91 (1.29) *</b>    |
| R <sup>2</sup> (within, between, overall) | <b>.38, .34, .36 **</b> | <b>.44, .52, .49 **</b> |

Total number of observations =400, Significance, \* <.05, \*\* <.01

**Table 7.5: Abbreviated Random Effects Models for Men and Women**

| Model 2                                   | Men<br>$\beta$ (SE)     | Women<br>$\beta$ (SE)   |
|---|-------------------------|-------------------------|
| Nuclear household (0=no, 1=yes)           | -1.84 (1.06)            | -2.35 (1.23)            |
| Ratio maize grown                         | -4.67 (3.49)            | -5.68 (3.81)            |
| Individual buys food (0=no, 1=yes)        | .70 (.81)               | <b>2.52 (.94) *</b>     |
| Women's trading (0=no, 1=yes)             | -.17 (1.31)             | <b>-3.17 (1.55) *</b>   |
| Men's formal econ. (0=no, 1=yes)          | .49 (1.13)              | .78 (1.34)              |
| Low school fees (0=no, 1=yes)             | <b>1.98 (.85) *</b>     | <b>3.74 (.95) **</b>    |
| High school fees (0=no, 1=yes)            | <b>3.0 (.93) **</b>     | <b>6.97 (1.26) **</b>   |
| R <sup>2</sup> (within, between, overall) | <b>.19, .02, .06 **</b> | <b>.30, .33, .34 **</b> |

Total number of observations =400, Significance, \* <.05, \*\* <.01

The final variable in Model 1 that has a similar positive and statistically significant relationship on distress scores for both men and women is paying school fees that are categorized as high. For men who pay such high school fees ( $\beta = 1.75$ ), distress scores increase on average 4%. For women ( $\beta = 2.91$ ), this effect results in an average 7% increase in distress scores. Women also experience a statistically significant and nearly

similar increase in distress scores when they contribute to school fees that are classified as low ( $\beta = 2.44$ ) as they do when contributing to high school fees. This results in an average 6% increase in distress scores. In combination, paying school fees contributes to approximately 13% increase in women's distress scores.

The second model, the model that excludes food insecurity survey scores as a predicting variable (Table 7.5) presents quite different results. This model presents a decrease in the amount of variation that is accounted for both men and women, but especially for men. This model accounts for 34% of the variation in distress scores for women and only 6% for men. This presents a 10% decrease for women and a 24% decrease for men as compared to the first model.

The effect of the nuclear household is eliminated in this model for both men and women. However, for women, buying food becomes a positive and statistically significant variable predicting distress scores ( $\beta = 2.52$ ) indicating that food purchasing increases women's distress, on average, by 6%. A variable that becomes statistically significant in a negative manner for women is participation in trading ( $\beta = -3.17$ ). Women who were involved in trading, experienced, on average an 8% decrease in distress scores. Variables that remain active in this model for women are paying low and high school fees. However, the coefficient increases for both categories. Paying low school fees ( $\beta = 3.74$ ) increases women's distress scores on average by 9%. Paying high school fees ( $\beta = 6.97$ ) increases women's distress scores by 17%, an economic contribution that adds the most of all variables included in these models to women's distress burden. In total, school fees contribute to a 26% increase in distress scores for women.

The only additional variable that proves to have a positive and statistically significant effect on distress scores for men is paying school fees categorized as low ( $\beta = 1.98$ ), an economic contribution that increases distress scores by 5%. School fees classified as high ( $\beta = 3.0$ ) remain significant in this model, though the coefficient nearly doubles. High school fees add approximately an 8% to men's distress scores. In total, school fees contribute to a 13% increase in distress scores for men. Whereas women's participation in the formal economy proved to have a negative relationship with their experience with distress, men's participation in the wage labor sector has no statistically significant effect on their experience with distress. Maize remains a statistically insignificant factor of distress in Model 2.

## **Discussion**

Results from this study confirm earlier findings from rural African subsistence contexts, that food insecurity is implicated in ill mental health (Cole and Tembo 2011; Hadley and Patil 2008). Seasonal data enables more nuanced analysis of the relationship. It is surprising that both of these scores are the highest in the first survey iteration in March (recalling the experience with food insecurity and distress in February). This is surprising because June and July are the months that are colloquially referred to as the "lean season." This could be because it is easier, or less distressing, to deal with periods of anticipated shortfall. June and July are months that are integrated into the collective memory as more challenging to meet food needs. With changing agro-ecological and economic conditions, the lean season may be expanding in ways that are not yet identified as "normal."



A related possibility is that February represents a juncture of household need and constraints in time and finance. February is a time period when cultivated food is running out and households are more reliant on purchasing food. This increased reliance on purchasing food also coincides with a time period in which men are preparing and planting yam farms<sup>23</sup>. In this interpretation, when looking at the income earning and food purchasing data, it is not surprising that this is also a time period when women are out-earning and out-purchasing men. Men are still earning income, but it is likely that this ability is compromised by the need to work on yam farms. Furthermore, any income earned by men is likely to be saved for the cost of agricultural inputs that will be needed beginning in April. Consideration of these seasonal variations is important because it shows how food insecurity, especially in agricultural communities, is reflective not only of the actions that women take to meet immediate food supply, but the actions that men take to ensure future food supply.

In turning to analysis of distress scores performed in the random effects modeling, one of the most telling predictors of distress proves to be living arrangements. That living in a nuclear household dwelling, as opposed to the traditional patrilocal (extended family) residential pattern, decreases mental health for both men and women is intriguing, but not necessarily surprising. This suggests that living in immediate quarters with extended family members is more mentally burdensome, perhaps because there are more people to provide for, as well as more people capable of making direct and frequent requests of time or money. Whereas previous studies have suggested that strong social relations play a role in alleviating the distress of food insecurity (Maes et al. 2010), this finding aligns

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<sup>23</sup> In interviewing men about the crops that were the most time and labor intensive, yam was commonly cited. Yam farming requires building large mounds to house the tubers as well as collecting or cutting tree branches to be staked into the mound for the emerging leaves.

with the suggestion that food insecurity is somehow implicated in disrupting household cohesion (Nanama and Frongillo 2012).

Additionally, the ways in which these gendered actions can be interpreted as contributing to distress are interesting. Before discussing how these gendered actions can be viewed as differentially distressing, I reiterate an ethnographic record that attests that there are gendered domains of socio-economic responsibility in this region of Ghana (Devereux 1993; Hesselberg and Yaro 2006; Padmanabahn 2007; Whitehead 1981). In this context, men are culturally titled the farmer and hold responsibility for meeting household food needs. Women are responsible for providing more minor food ingredients as well as assisting with household expenses in emergency contexts, but necessarily day-to-day household needs.

These are duties that informal conversations with men and women confirm as contemporarily upheld. Men in these field sites do reaffirm their responsibility for growing food, and also for buying food and contributing to needs such as clothing and educational and healthcare costs. Despite upholding this traditional provisioning role, men simultaneously recognize that their ability to actualize all of their duties is greatly constrained by increasingly risky farming conditions related to soil quality and rainfall. Men further described the need to adapt to the depreciating soil conditions through cultivating larger farms in an attempt to adequately yield sufficient crops. Even when men do diversify their income earning potential by taking part in the expanding wage labor economy, men described this work as not enough to meet all of their economic duties. During the agricultural seasons, balancing wage labor work with farm work was described as challenging. One man described how he thought his maize farm was

suffering because his days were often spent in construction work rather than properly weeding his farms.

In turn, women reaffirm their responsibility for earning money to take care of the non-staple food needs and to be involved in assisting the household with minor expenses. Even though women acknowledge that it is their husband's duty to fulfill household needs, they also acknowledged that they often contributed more to meeting these needs than their husbands can or do. At the same time, women often acknowledged that they had more diversified livelihood opportunities and thus more ways to earn money, therefore suggesting that they understand that the socio-economic context, rather than men's emotional apathy, is responsible for their increased workload and financial obligations.

This incongruence between expected and realized household contribution is found elsewhere in northern Ghana. In a study occurring in a neighboring region, Hesselberg and Yaro (2006: 52) describe men as unable to increase agricultural production, leaving women with higher work loads. These authors assert that men are still located within a narrow activity realm as compared to women who not only have more livelihood opportunities, but more flexibility in their activity patterns. This is a pattern I recognize as occurring in these field sites as well. With this understanding of how socio-economic roles are outlined versus how they are enacted, results from the random effects model gain gendered analytical potential. I argue that when these statistical results are framed against the ethnographic context, men are experiencing a negative affective state because they are unable to perform the duties expected of them and that women experience

distress because they are taking on a greater work and emotional load to meet household needs.

When looking at the first random effects model, there are minor, but important differences between men and women. Women experienced distress when paying school fees that are low or high, but men only experienced distress when they contributed to higher school fees. Additionally, the degree of that burden for higher school fees was more significant for women than men. I believe these minor differences speak to the gendered interpretations of economic duty. Men are technically held responsible for paying school fees. That they do not experience distress associated with paying minor school fees (fees less than 50 GHS) indicates that they have no emotive response to involvement in an activity that fits into their realm of expected duties. It is only when fees increase to higher levels that they demonstrate a distressing response. In turn, women experience distress at both levels of involvement, likely because this is an activity they are not culturally obligated to be regularly participating in.

The second random effects model produces even more significant gendered differences. When food insecurity is removed as a covariate, the variables that add to the burden of distress for women extend to buying food, another activity not ordained as a woman's responsibility. Women are expected to earn money to cover the costs associated with preparing a healthy and satisfying soup to accompany the staple porridge, invest in their business enterprises, and cover household emergencies. That their incomes do not go to supplying meat for soup, expanding their business, or serving as a nest egg, but rather to covering a majority of basic household expenses is the proposed context of stress. Trying to meet their own individual goals while also helping to cover the role of

men may be overly burdensome. That participation in trading, a higher income earning opportunity, reduces distress scores in Model 2 further supports this interpretation. If women are able to earn higher levels of income to meet the household needs that are becoming their realized obligation, even if they are not their cultural obligation, it seems likely that this would reduce the effects of ill mental health.

Regarding the effects for men as seen in Model 2, when food insecurity is removed as a covariate, the capacity of this model to predict men's distress greatly diminishes. This suggests that there is something particularly telling about food insecurity as a measurement that resonates more with men's experience than with women's. I propose that because food security is primarily the role of the man, their inability to achieve that status through farming or earning income leaves men in a negative affective state. The norms that structure the role of men in this subsistence society not only detail the level of farming activity necessary, but they structure how an individual sense of accomplishment and capability to feel and be seen as a *dominga* (good man or good male leader) is accomplished (Behnrends 2002). As a man from another community in the Upper West so states:

These days we are all walking around with numerous problems. It is either there is no food in the house, you cannot send a sick child to the hospital or you cannot afford to pay a child's school fees...the men here have no self-esteem anymore, many of us feel helpless...there is no peace of mind (Luginaah and Dakubo 2003: 1752).

## **Conclusion**

This study presented a unified discussion of gendered affective states resulting from food insecurity and thereby contributes to a gap in the literature on food insecurity and ill mental health. Whereas most studies have taken up a perspective that women are

more prone to experiencing such health outcomes, I adopted analysis considerate of gendered economic responsibilities of rural Ghanaian men and women as relational, rather than isolated. Without acknowledging and explaining the variability in the experience of food insecurity between men and women, there is room to blame outcomes of distress on more generic and proximate conditions such as “local culture” without exploring what those classifications are constructed or how they are operationalized. Furthermore, as recognition of mental health as an issue relevant to global health grows, medical anthropologists should be motivated to react to how poor mental health is discursively framed as an issue not just by medical communities, but by outlets such as the World Economic Forum. As neoliberal interests project concern about the effects of poor mental health on productivity levels and economic growth, medical anthropologists should continue to work to draw attention to the structural causes so that policy does not get directed to remediation rather than prevention (Insel 2014).

By applying the structural and relational concerns of political ecology to the assessment of existing ethnographic knowledge as well as seasonal data representing levels of food insecurity, distress, and economic activity, this study underscored a disconnect between contemporary perceptions and actual enactments of gendered economic roles to make a case for the gendered experience of distress. Traditional gender norms prescribe what men and women should be doing, but the social and ecological environment guides what can be done. The random effects modeling that is employed showed how excessive and non-normative involvement affects women and, conversely, how inability to fulfill the normative duties affects men. This approach helped clarify

how and why food insecurity results in distress in this rural, subsistence context in West Africa.

## **CHAPTER 8**

### **CONCLUSION**

Increasingly, bio-cultural anthropologists are calling for a theoretically grounded and methodologically appropriate approach to studying the relationship between food insecurity and mental health (Hadley and Wutich 2009; Wutich and Brewis 2014). This dissertation engaged with that call by uniting the concerns of adaptive capacity with the considerations of a feminist political ecology (of health) perspective. I therefore looked at how people coped with resource constraint through a lens that engaged bodies, emotions, and everyday practices and relationships (Harcourt and Nelson 2015; Hayes-Conroy and Hayes-Conroy 2008).

By applying these theoretical concerns to ethnographic and empirical evidence of the causes and consequences of food insecurity in two communities in semi-arid Ghana, I showed how food insecurity is situated as a concern, how it is managed, and how it is experienced. Data collected over the course of 23 months in the Upper West Region, between 2011 and 2015 informed analyses and findings. With these concluding remarks I underscore the major findings of this research, draw connections to theoretical and practical relevance, and comment upon future directions for research of this nature.

#### **Review of Significant Findings**

Chapter 5 isolated the differences between food insecurity as a condition versus food insecurity as an experience, and as such made important contributions to the ongoing development of food insecurity as a concept. I compared seasonal 24-hour food



recall surveys and interviews on dietary change to seasonal food insecurity surveys and seasonal changes in weight, body fat, and BMI.

Analysis of food insecurity surveys and anthropometrics indicated that there are discrete and seasonal differences in the magnitude of food and nutritional insecurity between the two communities of study. However, based upon dietary recall data, I identified dissatisfaction with uniform dietary patterns in both communities of study. Interviews about how diet has changed over the past 50 years substantiated that while diet today is unvaried, dietary practice of the past was more inclusive of different food stuffs throughout the year, not just at harvest time.

To broaden the scope of what is considered variation in diet beyond variation in staple food commodities such as maize, beans, yam, or rice, I further compared how preferences for different textural preparations of the staple porridge related to satisfaction with diet. This analysis showed that households are not only predominantly eating the most inexpensive food available (maize porridge) but prepared it in the most inexpensive manner possible, sacrificing foods and food preparatory methods that are preferred for social and physiological reasons.

With these results I concluded that while standardized food insecurity instruments and anthropometrics are reliable measurements for identifying food insecurity as a condition, they are not as reliable for identifying food insecurity as an experience. With an ongoing emphasis on the quantity of food consumed, these methods did not enable nuanced exploration of how people, in relation to their body, derived satisfaction and satiation from the foods that they ate.

With an understanding that food insecurity measured differently as a condition but uniformly as an experience, in Chapter 6 I established how food insecurity is situated as a worry. I employed a risk mapping exercise to gather subjective perceptions of the circumstances that cause worry in these field sites. With these results I was able to distinguish how food insecurity is situated against the factors that enable food production as well as other household concerns. These data showed that concerns over food are secondary to concerns over the costs of education. In comparison, an exercise that denoted the circumstances that bring happiness into the household also showed the relevance of both food and education.

Because education was the most worrisome factor of life identified in this context I argued that households are engaged in decision-making patterns that occur across a continuum of time. Instead of being worried only about immediate needs such as food, they also expressed concern about their uncertain futures. Formal education is a new aspect of social capital in this region of Ghana. Most adults in these villages had no formal schooling and understand how this is disadvantageous to their livelihood opportunities. When combined with the localized perceptions of how climate change and declining soil fertility are hindering their ability to be successful farmers—or farmers who can depend solely on farming—this finding ultimately speaks to how people perceive of alleviating their risks in an uncertain future. Supported by data that indicated that people view their future to be more stable than either their present socio-economic situation or their past, as well as by findings that showed that investment in education is demonstrable of socio-economic mobility, I argued that education was a greater worry

than food because educated children are social buffers in an uncertain ecological and economic context.

In looking more specifically at how the features of food production (such as access to improved seeds or pests) ranked as uncommon and rather mild concerns when compared to concerns about food access, I argued that people are more concerned about entitlements to their perceived needs than they are about how to improve their yield or become better farmers. While I suggest that this finding tempers the role of agriculture in this local food economy, I do not interpret it as negating the role of agriculture as a livelihood feature. Because people imagined a more successful future as one inclusive of ongoing agricultural activity, it is important to continue to understand the relevance of agriculture to the diverse household economy rather than as a necessarily independent or most important livelihood activity. As food prices remain quite volatile, I argued that it is likely that households will want to continue to produce as much of their food supply as possible so that income earned can be devoted to other household needs that cannot be self-produced.

Chapter 6 established that even though food insecurity is not the most pressing worry, it is a severely indicated and prevalent worry. In chapter 7 I therefore looked at how food insecurity, as a conditional variable measured through seasonal surveys, associated with ill mental health, as measured through a seasonal survey of symptoms of distress. Regression analysis inclusive of the full sample showed that distress significantly associated with food insecurity. Upon confirmation of a significant relationship, I then constructed a model to clarify the pathway by which food insecurity contributes to distress. I took a gendered analytic approach that employed both

qualitative and quantitative data sets. From ethnographic understanding of the expected economic roles of men and women, I organized seasonal participation in these activities as variables that were incorporated into random effects models for men and women.

I analyzed these results in a forward stepwise manner so as to reflect upon how increasingly stressful responsibilities contributed to the measurement of distress. In this way I find that whereas both men and women demonstrate distress resulting from food insecurity, the pathways by which that distress is embodied are quite different and tied to the particular enactment, or not, of gendered economic duties. Women, I argued, experience distress related to food insecurity because they performed food procuring duties as well as contributed to other household needs that are not, culturally, in their purview. I argued that men, on the other hand, experienced distress related to food insecurity precisely because they were not able to perform the food procuring activities that are their culturally ordained responsibility. I interpreted these different pathways as different experiences with negative affect. I associated the experiences of men as related to shame and the experiences of women as related to anxiety.

### **Contributions to Theory and Drawing Connections to Practice**

This research bridges theory and practice. While not explicitly engaged in critiquing development, it is engaged in detailing the life ways, processes, and outcomes of coping with vulnerable economic and ecological contexts, the very conditions that development interventions purport to fix (Carr 2011; Nelson and Finan 2009). I draw broadly on the subfields of bio-cultural, medical, and economic anthropology to show how health is an embodiment ultimately constructed through complex and political interactions between social, economic, and ecological worlds. As the operations for

designing and enacting “development” shift from the domain of national aid agencies and non-governmental entities to private foundations established through the mass accrual of capital, delivering competent and empirically established critiques of development, and the narratives that fuel it, remains increasingly important. Long-term empirical research that is embedded in and informed by critical theoretical arguments should engage with and speak to the solutions proffered by philanthropists and development agencies. Here I attempt to speak to this domain by integrating my perceived contributions to policy and practice alongside my contributions to critical theory.

I isolated food insecurity as a particular condition of poverty to assess the embodiment of inequality. From an adaptive capacity perspective, I demonstrated how food insecurity was a heterogeneous experience relative to particular socio-economic and socio-ecological contexts and coped with through different, often progressive coping strategies (Adams et al. 1998; Baro and Deubel 2006; Berry 1984; Corbett 1988; deWaal 1989; Shipton 1990; Watts 1983; Watts and Bohle 1993; Wutich and Brewis 2014). One of the embodied outcomes of food insecurity found is a varied rate of poor nutrition between the two field sites. By tracking body composition across the course of a year, I was able to show that biological measures of nutrition fluctuated through the intersection of livelihood opportunities (and the physical work load entailed) and constrained food supply (Huss-Ashmore and Goodman 1988). This contributes to the bio-cultural endeavor to show how the embodied effects of resource constraint requires a consideration of the interconnections between global and local political economies and ecologies (Crooks et al. 2007; Huff 2014; Leatherman 2005; Dufour 2006).

At the same time, I did not limit analysis to the biological considerations of food insecurity. Analysis of the effects of food insecurity also drew from theories of embodiment that position the body as the site where social and political, as well as biological transactions transpire. In this way, the multi-sited material body is one that includes bodily affects and emotions related to bodily desires (Carney 2014; Hayes-Conroy and Hayes-Conroy 2008, 2013; Hayes-Conroy and Sweet 2015; Scheper-Hughes and Lock 1987; Yates-Doerr 2013). I adopted this perspective to show how, despite quantity of food consumed and bodily composition deemed nutritionally acceptable, people are not satisfied with their diets. An ultimate contribution of this research, therefore, is its ability to show that the lack of desired food is a disparity that is both perceived and felt as poor health (Carney 2015; Chilton and Booth 2007; Hadley and Patil 2008; Hayes-Conroy and Sweet 2015; Scheper-Hughes 1992). This demonstrated food insecurity as an experience related to more than the quantity of food produced or accessible. In my analysis of how worries about food are connected to the agricultural economy, I detailed specifically how concerns over food are related to entitlements. I made the point that the global processes that structure food prices, and therefore food accessibility, are more hindering to farming populations than their lack of technologies such as improved seeds.

These findings collectively speak quite against a very predominant paradigm of how to establish food security in the African context. For the past 15 years there has been a surge in efforts to address rural poverty in Africa through enhanced agricultural production of commodity crops. These agendas are informed by narratives of modernity that continue to assure policy makers that if small holder populations advance beyond

their “traditional” ways of farming and embrace the solutions of science and markets, agricultural yields will increase, thus increasing both household food supply and income (Moseley et al. 2015; Vercillo et al. 2015). With results from Upper West Ghana that show that people were regularly sacrificing a desired and readily available diet of local foodstuffs I would instead direct agricultural interventions to research that demonstrate how small-scale, agro-ecological farming schemes focused on indigenous crops reduce levels of food insecurity (Conrad 2014; Patel et al. 2015).

Further countering the appropriateness of technologically enhanced agricultural interventions are findings that uphold a key stance of ecological and economic anthropology. As has been consistently shown throughout Africa, by emphasizing localized perceptions of needs and goals, this research confirmed that diversity in livelihood, rather than specialization, is the way to manage the risks of living in a vulnerable socio-ecological context (Batterbury 2001; Scoones 2009; West 2013). This underscores a disconnection between the prevailing agricultural development discourse in Ghana and people’s realities. Similar to previous findings from elsewhere in northern Ghana, evidence from this research suggests that poverty would be better addressed through supporting the diversification of contextually relevant livelihoods rather than the fortification of any one livelihood, especially agriculture (Hesselberg and Yaro 2006; Whitehead 2002).

Attention to interlocutor subjectivity rather than researcher assumption, led to interpretation that education is the mechanism by which livelihood diversification is most immediately important as well as relevant to the structuring of a more stable and diverse future livelihood engagement. Men and women in these field sites described their actions

at diverse income ventures as necessary for contributing to the high costs of educating children. These immediate investments, in turn, are seen as investments in their children's future ability to acquire employment beyond farming and to bring stability to households largely reliant on non-wage labor activities. This reifies the importance of a moral economy, or social support systems, to household viability (Hanrahan 2015; Li 2014; Scott 1976; Watts 1983).

The finding of the relevance of education to decision making processes shows how households strive to achieve not just a stable contemporary milieu but a stable future, thereby underscoring the relevance of resilience to this context. By framing these subjective risks against the political and economic processes that construct them I show how resilience to such subjective risks are locally understood and locally enacted through the pursuit of educating children (Nightingale 2015). This contributes to what Nefissa Naguib (2015) identifies as the essence of anthropology—the ability to address the social and political imaginaries of human beings.

In the context of how rural West African livelihoods in a semi-arid context are already adapting to climate change, the message that this research can deliver to policy makers and development strategists is that while rural populations perceive changes in rainfall patterns and temperatures as real and affecting changes to their subsistence activities, they are perceived as but as but one of many problems (Nyantakyi-Frimpong and Bezner-Kerr 2015a; Tschakert 2007; van der Geest 2011). As such, any one-size-fits-all solution, such as drought tolerant seeds, is likely ill suited for effective intervention. This is not to say that the development of drought tolerant seeds has no place in food insecurity or climate change discourse, but it is to say that drought tolerant



seeds cannot be the only solution—especially if such seeds, or their products, are embedded in global commodity chains (Nyantakyi-Frimpong and Bezner-Kerr 2015b; Yaro 2013).

While I direct strong critique at the inappropriateness of policies and practices that implement large-scale agricultural projects as a means to end food insecurity, I also find it relevant to emphasize the need for stronger and more critical engagement with educational policy in the discourse on solutions to poverty. Despite the fact that the subsidization of primary schooling in Ghana has greatly facilitated higher enrollment, this research shows that even at the primary level, costs still accrue for parents through the need for proper uniforms, exam fees, supplies, etc. As such, with national political discourse building to institute subsidized secondary schooling in Ghana, it is pertinent to question what processes occur to destabilize truly free education (Ohba 2011).

In looking at how food insecurity results in distress, I built from existing studies to show how gender factors into the embodiment of resource insecurity (Wutich 2009). This analytical integration built from a substantial body of scholarship situating rural African household economies as processes of social relations that contribute to both shared and separate well-being and interests (Jackson 2007). Gendered economic roles factor into these social relations, but are often filtered through opportunities and constraints generated by structural forces and not solely cultural constructions (Carney 1993; Carr 2008; Greenough 2012; Naguib 2015; Schroeder 1993).

I explained gendered differences in the experience of distress through analysis of culturally gendered economic norms and the constraints on the fulfillment of such norms. By detailing ways that men are not able to fulfill their domestic duties, leaving women

overburdened, I turned a generic category like food insecurity into a lived experience. With this approach—what Lende (2012) refers to as radical contextualization—I presented a analytical process that clarified the etiology of food insecurity and distress, thereby presenting a possible answer to ongoing questions about the causal relationship between food insecurity and mental health outcomes (Hadley and Patil 2006; Weaver et al. 2014). Ultimately, this demonstrated how distress is an everyday experience of inequality (Coker 2004; Eggerman and Panter-Brick 2010; Oths 1999; Pike 2005; Wutich 2009).

This perspective de-merits a common trope, especially for patriarchal societies in Africa, that men are lazy and un-caring in their familial lives (Harrison 2000; Whitehead 2000) and parallels the findings of another study in Burkina Faso (Nanama and Frongillo 2012). Another critical contribution of this gendered analysis of distress is the capability to challenge how the concept of empowerment—and women’s empowerment in particular—is used in development circles. Empowerment is a concept increasingly applied to projects and interventions that seek to give women greater relative control over assets, income, and decision-making, particularly in agricultural activities. This increasing usage of empowerment in development is tied to ground-breaking research from feminist economists that exposed disparities in the ownership of productive resources between men and women (Deere and de Leon 2001). There is a working assumption within the application of this research to methodological tools that if only women were empowered, they would be able to elevate their households to a more stable socio-economic status. Because of the overwhelming emphasis placed on women’s involvement in owning the assets relevant to agricultural production, it is difficult to

overlook how this discursive bent parallels the agenda of large-scale agricultural development programs that work with agribusiness entities to connect their products to smallholders. Women who are empowered, in this light, are new customers. If distress can be interpreted as a converse of empowerment, this research shows that regardless of their status in a patriarchy, and rather, probably because of it, men are as distressed as women. Their inability to perform their roles, as efficient and productive farmers, contributes largely to this distress.

### **Future Directions**

Results from this dissertation present interesting junctures from which future research should proceed. In particular, I see potential to address important theoretical concerns, especially in terms of situating the body as a site of inquiry (Hayes-Conroy and Hayes Conroy 2013). In ongoing development of food insecurity as a concept that is integrated into methods of measurement, I advocate for stronger systematic usage of qualitative methodology. If food insecurity is to be understood as more than just a measurable condition, but as a relational experience between the body and food, the ways in which the concept is incorporated into methodology requires re-evaluation. Specifically I encourage future researchers to address the body as a site of affect where cravings and desires that are born out of both biological and cultural needs are found. Particular attention should also be paid to how the aesthetics of food contribute to bodily satisfaction and sensory appeal (Sutton 2010). While texture and color of food prove to be very important in this context, it is likely that these qualities also integrate into other food cultures in interesting ways regarding how food is culturally coded as pleasing or satisfying.

Based on the findings of this research, I further join in and advance the calls of other researchers to re-examine the orientation of livelihoods frameworks. This involves directing attention beyond the primary focus on the economic facet of production (Bebbington 1999; Harris 2015). Concern has been expressed about how considerations of individual economic decision-making overlook how the social dimensions of the household contribute to collective well-being and the sustainability of a household system (Carr 2013). There are promising new routes by which a livelihoods framework grounded in social relations rather than economic individuality can move forward. As evidenced in Kelsey Hanrahan's recent work in northern Ghana, by incorporating an ethics of care into considerations of livelihoods, we can direct our attention to the interdependent nature of livelihood strategies (Hanrahan 2015).

This, I attest, would also extend our understanding of how factors of positive affect, such as cooperation, contribute to sustained households and livelihoods, thereby bridging to calls from bio-cultural anthropology to focus on how individuals and households enact social and cultural norms to buffer the distress of living under vulnerable and uncertain conditions (Eggerman and Panter-Brick 2008; 2010; Panter-Brick 2014). Attention to such social and behavioral qualities is further merited given that in a review of the idiom of distress "thinking too much," one-third of studies found that being alone only exacerbated this condition of excessive worry (Kaiser et al. 2015). In turn, this push would also speak to broader calls in medical anthropology to remove the notion of health as an individual quality, instead directing attention to considerations of health as an inherently social and relational quality that is constructed through and dispersed across collectives and time (Yates-Doerr and Carney 2015; Garro 2011).

Intensified focus on the social and behavioral coping mechanisms employed to maintain health would serve as important methodological and analytical infrastructure to expand studies of resource insecurity and distress beyond that of cause and effect. Future research should address how the effects of distress are not just outcomes of socio-economic contexts, but also an input back into such systems (Leatherman 2005; Schell 1997). Research so directed would extend analysis to look at how poor health outcomes associated with food insecurity could potentially inhibit the very social and economic means by which people access food. Tracing such a feedback loop would help further define the conditions by which food insecurity is constructed and challenge the predominant discourse on food insecurity as a condition tied exclusively to failed agricultural production.

Speaking more generally to studies of vulnerability and economic processes in Sub-Saharan Africa, this particular research context presents a rich opportunity for more engaged scholarship on the pressures that lead to change in land usage. There has been a surge in research recently that has importantly addressed the intersection of land grabs and biofuels (Yaro 2010). Less investigated are the ways that capitalism is, to use Tania Murray Li's descriptor, "mundanely" changing patterns of land ownership and usage (Li 2014: 9). Li's adjective is important because it draws attention to how the relationship between capitalism and land tenure is not strictly related to coercive forces, but is one also born from hope for a better future. As the title of this dissertation alludes, and as the findings asserted, because rural livelihood strategies in the Upper West attempt to weigh present well-being against an uncertain future, future research trajectories should more readily embrace this nexus of where hope and decision making symbiotically exist.

## REFERENCES

- Abdulai, Abdul-Gafaru and D. Hulme 2015. The politics of regional inequality in Ghana: state elites, donors, and PRSPs. *Development Policy Review* 33(5): 529-553.
- Abdul-Korah, G. B. 2011. “Now if you have only sons you are dead”: migration, gender, and family economy in twentieth century northwestern Ghana. *Journal of Asian and African Studies* 46(4): 390–403.
- Acheampong, E., N. Ozor, E. Owusu 2014. Vulnerability assessment of northern Ghana to climate variability. *Climatic Change* 126: 31-44.
- Adams, Alayne M., J. Cekan, R. Sauerborn 1998. Towards a conceptual framework of household coping: reflections from West Africa. *Africa* 68(2): 263-283.
- Adger, W. Neil 2006. Vulnerability. *Global Environmental Change* 16(3): 268-281.
- Adinkrah, Mensah 2012. Better dead than dishonored: masculinity and male suicidal behavior in contemporary Ghana. *Social Science & Medicine* 74(4): 474–481.
- Allman, Jean 1993. *The Quills of the Porcupine: Asante Nationalism in an Emergent Ghana*. Madison: University of Wisconsin Press.
- Annegers, John F. 1973. Seasonal food shortages in West Africa. *Ecology of Food and Nutrition* 2: 251–257.
- Appel, Hannah 2012. Offshore work: oil, modularity, and the how of capitalism in Equatorial Guinea. *American Ethnologist* 39(4): 692-709.
- Armelagos, George J. 2010. The omnivore’s dilemma: the evolution of the brain and the determinants of food choice. *Journal of Anthropological Research* 66(2): 161-186.
- Avotri, Joyce Yaa and V. Walters 1999. “You just look at our work and see if you have any freedom on earth”: Ghanaian women’s accounts of their work and their health. *Social Science & Medicine* 48: 1123-1133.
- Avotri, Joyce Yaa and V. Walters 2001. “We women worry a lot about our husbands”: Ghanaian women talking about their health and their relationships with men. *Journal of Gender Studies* 10(2): 197-211.

- Baro, Mamadou and Tara Deubel 2006. Persistent hunger: perspectives on vulnerability, famine, and food security in sub-Saharan Africa. *Annual Review of Anthropology* 35: 521-538.
- Batterbury, Simon 2001. Livelihood diversification in south-western Niger. *Ecumene* 8 (4): 437-464.
- BBC 2014a. Ghana protests over high cost of living. *BBC Africa*, July 24. <http://www.bbc.com/news/world-africa-28473594>
- BBC 2014 b. Ghanaian football fans request asylum in Brazil. *BBC Africa*, July 11. <http://www.bbc.com/news/world-latin-america-28257602>
- BBC 2015. Ghana secures \$1bn IMF loan in bid to revive economy. *BBC Business*, February 26. <http://www.bbc.com/news/business-31652406>
- Bebbington, Anthony 1999. Capitals and capabilities: a framework for analyzing peasant viability, rural livelihoods, and poverty. *World Development* 27(12): 2021-2044.
- Becker, Laurence C. 2000. Garden money buys grain: food procurement patterns in a Malian village. *Human Ecology* 28(2): 219-250.
- Bemme, Doerte and N. D'souza 2012. Global mental health and its discontents. *Somatosphere* (blog) July 23. <http://somatosphere.net/2012/07/global-mental-health-and-its-discontents.html>.
- Bene, C., D. Headey, L. Haddad, K. von Grebmer 2016. Is resilience a useful concept in the context of food security and nutrition programmes?: some conceptual and practical considerations. *Food Security* 8: 123-138.
- Bentley, Gillian R., R. Aunger, A. M. Harrigan, M. Jenike, R.C. Bailey, P. T. Ellison 1999. Women's strategies to alleviate nutritional stress in a rural African society. *Social Science & Medicine* 48(2): 149-162.
- Bernhends, Andrea 2002. "Pogminga"—the "proper Dagara woman": an encounter between Christian thought and Dagara concepts. *Journal of Religion in Africa* 32(2): 231-253.
- Berry, Sara 1984. The food crisis and agrarian change in Africa: a review essay. *African Studies Review* 27(2): 59-112.
- Berry, Sara 1993. *No Condition is Permanent: The Social Dynamics of Agrarian Change in Sub-Saharan Africa*. Madison: University of Wisconsin Press.

- Bezner Kerr-Rachel 2005. Informal labor and social relations in northern Malawi: the theoretical challenges and implications of ganyu labor for food security. *Rural Sociology* 70(2): 167-187.
- Biney, Ama 2011. *The Political and Social Thought of Kwame Nkrumah*. New York: Palgrave McMillan.
- Blaser, Thomas 2013. Africa and the Future: An Interview with Achille Mbembe,” *Africa is a Country*, November 20. <http://africasacountry.com/2013/11/africa-and-the-future-an-interview-with-achille-mbembe/>
- Biederlack, Lisa and J. Rivers 2009. *Comprehensive Food Security and Vulnerability Analysis: Ghana*. Rome: World Food Programme.
- Biehl, João, B. Goodman, A. Kleinman. “Introduction: rethinking subjectivity,” In *Subjectivity: Ethnographic Investigations*. Editors João Biehl, B. Goodman and A. Kleinman, pp. 1-23. Berkeley: University of California Press.
- Boahmah, Nicholas A. 2013. Urban land market in Ghana: A study of the Wa Municipality. *Urban Forum* 24(1): 105-118.
- Brun, Thierry, F. Bleiberg, and S. Goihman 1981. Energy expenditure of male farmers in dry and rainy Seasons in Upper-Volta. *British Journal of Nutrition* 45: 67–75.
- Brush, Stephen 1975. The concept of carrying capacity for systems of shifting cultivation. *American Anthropologist* 77(4): 799-811.
- Brush, Stephen 1977. *Mountain, Field, and Family: The Economy and Human Ecology of an Andean Valley*. Philadelphia: University of Pennsylvania Press.
- Brush, Stephen 1992. Reconsidering the green revolution: diversity and stability in cradle areas of crop domestication. *Human Ecology* 20(2): 145-167.
- Bull, Torill, M. Duah-Owusu, and C. Andvik 2010. “My happiest moment is when I have food In stock”: poor women in northern Ghana talking about their happiness. *International Journal of Mental Health Promotion* 12(2): 24–31.
- Bunting, Erin, J. Steele, E. Keys, S. Muyengwa, B. Child, J. Southworth 2013. Local perceptions of risk to livelihood in the semi-arid landscape of southern Africa. *Land* 2: 222-251.
- Carney, Judith 1993. Converting the wetlands, engendering the environment: the intersection of gender with agrarian change in the Gambia. *Economic Geography* 69(4): 329-348.



- Carney, Megan 2014. The biopolitics of ‘food insecurity’: towards a critical political ecology of the body in studies of women’s transnational migration. *Journal of Political Ecology* 21: 1-18.
- Carney, Megan 2015. *The Unending Hunger: Tracing Women and Food Insecurity Across Borders*. Berkeley: University of California Press.
- Carr, Edward R. 2006. Postmodern conceptualizations, modernist applications: rethinking the role of society in food security. *Food Policy* 31:14-29.
- Carr, Edward R., 2008. Men’s crops and women’s crops: the importance of gender to the understanding of agricultural and development outcomes in Ghana’s Central Region,” *World Development* 36(5): 900-915.
- Carr, Edward R. 2011. *Delivering Development: Globalization’s Shoreline and the Road to a Sustainable Future*. New York: Palgrave MacMillan
- Carr, Edward R. 2013. Livelihoods as intimate government: reframing the logic of livelihoods for development. *Third World Quarterly* 34(1): 77-108.
- Carter, Kristie N., K. Kruse, T. Blakely, and S. Collings 2011. The association of food security with psychological distress in New Zealand and any gender differences. *Social Science & Medicine* 72: 1463–1471.
- Cash, Johnny. *I’m a Worried Man*. Song. Performed by Johnny Cash. 1974. Nashville: Sony.
- Cashdan, Elizabeth 1985. Coping with risk: reciprocity among Basarwa of northern Botswana. *Man* 20(3): 454-474.
- Casimir, M.J. 1988. “Nutrition and socio-economic strategies in mobile pastoral societies in the middle east with special reference to west Afghan Pashtuns,” In *Coping with Uncertainty in Food Supply*. Editors I. de Garine and G. Harrison. Oxford: Clarendon Press.
- Chalfin, Brenda 2004. *Shea Butter Republic*. New York: Routledge.
- Chalfin, Brenda 2011. *Neoliberal Frontiers: An Ethnography of Sovereignty in West Africa*. Chicago: University of Chicago Press.
- Chambers, Robert and G. Conway 1992. Sustainable Rural Livelihoods: Practical Concepts for the 21<sup>st</sup> Century. *IDS Discussion Paper* 296. Brighton: IDS.
- Chilton, Mariana, and S. Booth 2007. “Hunger of the body and hunger of the mind”: African American women’s perceptions of food insecurity, health, and violence. *Journal of Nutrition Education and Behavior* 39 (3): 116-125.

- Chisholm, James and D.A. Coall 2008. "Not by bread alone: the role of psychosocial stress in age at first reproduction and health inequalities," In *Evolutionary Medicine and Health: New Perspectives*. Editors W.R. Trevathan, E.O. Smith and J. McKenna. New York: Oxford University Press.
- Clapp, Jennifer 2014. World hunger and the global economy: strong linkages, weak action. *Journal of International Affairs* 67(2): 1-17.
- Cleveland, David 1980. *The Population Dynamics of Subsistence Agriculture in the West African Savanna: A Village in Northeast Ghana*. Unpublished Doctoral Dissertation. Tucson: University of Arizona.
- Cliggett, Lisa 2005. *Grains from Grass: Aging, Gender, and Famine in Rural Africa*. Cornell: Cornell University Press.
- Coates, Jennifer, E.A. Frongillo, B.L. Rogers, P. Webb, P.E. Wilde and R. Houser 2006. Commonalities in the experience of household food insecurity across cultures: what are measures missing? *The Journal of Nutrition* 136(5): 14385-14485.
- Coates, Jennifer C., P. Webb, R. Houser, B. Lorge Rogers, P. Wilde 2010. He said, she said: who should speak for households about experiences of food insecurity in Bangladesh? *Food Security* 2: 81-95.
- Coates, Jennifer 2013. Build it back better: deconstructing food security for improved measurement and action. *Global Food Security* 2(3): 188-194.
- Coker, Elizabeth 2004. 'Traveling pains': embodied metaphors of suffering among southern Sudanese refugees in Cairo. *Culture, Medicine, and Psychiatry* 28: 15-39.
- Cole, Steven M, and G. Tembo 2011. The effect of food insecurity on mental health: panel evidence from rural Zambia. *Social Science & Medicine* 73: 1071-1079.
- Colson, Elizabeth 1979. In good years and in bad: food strategies of self-reliant societies. *Journal of Anthropological Research* 35(1): 18-29.
- Conklin, Harold 1961. The study of shifting cultivation. *Current Anthropology* 2(1): 27-61.
- Conrad, Abigail 2014. *We are Farmers: Agriculture, Food Security, and Adaptive Capacity among Permaculture and Conventional Farmers in Central Malawi*. Unpublished Doctoral Dissertation. Washington DC: American University.
- Cousins, Thomas 2016. Antiretroviral therapy and nutrition in southern Africa: citizenship and the grammar of hunger. *Medical Anthropology* DOI: 10.1080/01459740.2016.1141409

- Corbett, Jane 1988. Famine and household coping strategies. *World Development* 16(9): 1099-1112.
- Crooks, Deb, L. Cliggett, and S. Cole 2007. Child growth as a measure of livelihood security: the case of the Gwembe Tonga. *American Journal of Human Biology* 19(5): 669-675.
- Csordas, Thomas 1990. Embodiment as a paradigm for anthropology. *Ethos: Journal of the Society for Psychological Anthropology* 18(1): 5-47
- Davidson, Joanna 2012. Of rice and men: climate change religion, and personhood among the Diola of Guinea-Bissau. *Journal for the Study of Religion, Nature, and Culture* 6(3): 363-381.
- Davies, Susanna 1996. *Adaptable Livelihoods: Coping with Food Insecurity in the Malian Sahel*. New York: St. Martin's Press.
- Decker, Seamus 2000. Salivary cortisol and social status among Dominican men. *Hormones and Behavior* 38(1): 29-38.
- Deere, Carmen and Magdalena de Leon 2001. *Empowering Women: Land and Property Rights in Latin America*. Pittsburgh: University of Pittsburgh Press.
- de Garine and Koppert 1988. "Coping with seasonal fluctuations in food supply among savanna populations: the Massa and Mussey of Chad and Cameroon," in *Coping with Uncertainty in Food Supply*. Edited by I. de Garine and G. Harrison. Oxford: Clarendon Press.
- de Schlippe, Pierre 1956. *Shifting Cultivation in Africa: The Zande System of Agriculture*. London. Routledge and Paul.
- Desjarlais, Robert and C.J. Throop 2011. Phenomenological approaches in anthropology. *Annual Review of Anthropology* 40: 87-102.
- Destombes, Jerome 2006. From long-term patterns of seasonal hunger to changing experiences of everyday poverty: north-eastern Ghana c. 1930-2000. *The Journal of African History* 47(2): 181-205.
- Devereux, Stephen 1993. *Household Responses to Food Insecurity in Northeastern Ghana*. Unpublished Doctoral Thesis. Oxford: Oxford University.
- de Waal, Alex. *Famine that Kills: Darfur, Sudan*. New York: Oxford University Press, 1989.
- Dewalt, Billie R. 1998. "The political ecology of population increase and malnutrition in southern Honduras." In *Building a New Biocultural Synthesis: Political Economic*

- Perspectives on Poverty*. Editors Alan Goodman and Thomas Leatherman, Pp. 295-316. Ann Arbor: University of Michigan Press.
- Dewey, Kathleen 1981. Nutritional consequences of the transformation from subsistence to commercial agriculture in Tabasco, Mexico. *Human Ecology* 9(2): 151-187.
- Dilley, Max and Tanya Boudreau 2001. Coming to terms with vulnerability: a critique of the food security definition. *Food Policy* 26(3): 229-247.
- Dixon, Jenna, I. Luginaah, P. Mkandawire 2014. The national health insurance scheme in Ghana's Upper West Region: a gendered perspective of insurance acquisition in a resource-poor setting. *Social Science & Medicine* 122: 103-112.
- Dove, Michael 1983. Theories of swidden agriculture, and the political economy of ignorance. *Agroforestry Systems* 1: 85-99.
- Dressler, William W. and J.R. Bindon 2000. The health consequences of cultural consonance: cultural dimensions of lifestyle, social support, and arterial blood pressure in an African American community. *American Anthropologist* 102(2): 244-260.
- Dressler, William W., M.C. Balieiro, R.P. Ribeiro, J.E. Dos Santos 2005. Cultural consonance and arterial blood pressure in urban Brazil. *Social Science & Medicine* 61: 527-540.
- Dreze, Jean and Amartya Sen 1989. *Hunger and Public Action*. Oxford: Clarendon Press.
- Dufour, Darna 2006. Biocultural approaches in human biology. *American Journal of Human Biology* 18(1): 1-9.
- Dufour, Darna and B. Piperata 2008. Energy expenditure among farmers in developing countries: what do we know? *American Journal of Human Biology* 20(3): 249-258.
- Dylan, Bob. *Like a Rolling Stone*. Song. Performed by Bob Dylan. 1965. New York: Columbia
- Eakin, Hallie and Amy L. Luers 2006. Assessing the vulnerability of social-environmental systems. *Annual Review of Anthropology* 31: 365-394.
- Eggerman, Marc and C. Panter-Brick 2010. Suffering, hope, and entrapment: resilience and cultural values in Afghanistan. *Social Science & Medicine* 71: 71-83.
- Eguavoen, Irit and Benjamin Schraven 2013. "The ambiguous representations of the savanna landscape and its new political relevance in Ghana," In *Rural Development in Northern Ghana*. Editor Joseph Yaro, pp. 207-224. New York: Nova Publishers.

- Eyre, Banning 2015 (June 22). Back in Ghana, Pat Thomas give new life to high life. In *All Things Considered*. Washington D.C.: National Public Radio.
- Fairhead, James and Melissa Leach 1995. False forest history, complicit social analysis: rethinking some West African environmental narratives. *World Development* 23(6): 1023-1035.
- Finnis, Elizabeth 2007. The political ecology of dietary transitions: changing production and consumption patterns in the Kolli Hills, India. *Agriculture and Human Values* 24: 343-353.
- Finnis, Elizabeth 2008. Economic wealth, food wealth, and millet consumption: shifting notions of food, identity, and development in south India. *Food, Culture and Society* 2(4): 464-485.
- Fleuret, Patrick, and Anne Fleuret 1980. Nutritional implications of staple food crop successions in Usambara, Tanzania. *Human Ecology* 8(4): 311-327.
- Fleuret, Patrick and Anne Fleuret 1991. Social organization, resource management, and child nutrition in the Taita Hills, Kenya. *American Anthropologist* 93(1): 91-114.
- Flinn, Mark D. and Barry England 1995. Childhood stress and family environment. *Current Anthropology* 36(5): 854-866.
- Ford, James D. Vulnerability of Inuit food systems to food insecurity as a consequence of climate change: a case study from Iglooik, Nunavut. *Regional Environmental Change* 9: 83-100.
- Fortes, Meyer 1936. Culture contact as a dynamic process: an investigation in the Northern Territories of the Gold Coast. *Africa* 9(1): 24-55.
- Fortes, Meyer and S.L. Fortes 1936. Food in the domestic economy of the Tallensi. *Africa* 9(2): 237-276.
- Fortes, Meyer 1953. The structure of unilineal descent groups. *American Anthropologist* 55(1): 17-41.
- Fox, R. 1953. *A Study of Energy Expenditure of Africans Engaged in Various Rural Activities*. Unpublished Doctoral Thesis. London: University of London.
- Gardner, Katy and David Lewis 2015. *Anthropology and Development: Challenges for the Twenty-First Century*. London: Pluto Press.
- Garro, L. 2011. Enacting ethos, enacting health: realizing health in the everyday life of a California family of Mexican descent. *Ethos* 39(3): 300-330.

- Ghana Statistical Services 2013. *2010 Population and Housing Census: Regional Analytical Report, Upper West Region*. Accra: Ghana Statistical Service.
- Ghana Statistical Services. 2014. *Ghana Living Standards Survey Round 6 Main Report*. Accra: Ghana Statistical Services.
- Geertz, Clifford 1966. *Agricultural Involution: The Process of Ecological Change in Indonesia*. Berkeley: University of California Press.
- Goland, Carol 1993. Field scattering as agricultural risk management: a case study from Cuyo Cuyo, Department of Puno, Peru. *Mountain Research and Development* 13(4): 317-338.
- Goodman, Alan and T. Leatherman 1998. *Building a New Biocultural Synthesis: Political Economic Perspectives on Poverty*. Ann Arbor: University of Michigan Press.
- Goodman, Michael K. 2014. Food geographies I: relational foodscapes and the busyness of being more-than-food. *Progress in Human Geography* 3(1): 1-10.
- Goody, Jack 1962. "Fission of domestic group among the Lodagaba," In *The Development Cycle in Domestic Groups*. Editor Jack Goody, pp. 53-91. Cambridge: Cambridge University Press, 1962.
- Goody, Jack 1980. Rice-burning and the Green Revolution in northern Ghana. *The Journal of Development Studies* 16(2): 136-152.
- Goody, Jack 1982. *Cooking, Cuisine and Class: A Study in Comparative Sociology*. New York: Cambridge University Press.
- Gravlee, Lance and W. Dressler 2005. Skin pigmentation, self-perceived color, and arterial blood pressure in Puerto Rico. *American Journal of Human Biology* 17: 195-206.
- Greenough, Karen 2012. Women, men, livestock: partnerships and gendered negotiations in the Ful'be household livestock enterprise. *Gendered Perspectives on International Development Working Paper* 301. East Lansing: Gender, Development and Globalization.
- Grischow, Jeff 2001. Late colonial development in British West Africa: the Gonja Development Project in the Northern Territories of the Gold Coast, 1948-1957. *Canadian Journal of African Studies* 35(2): 282-312.
- Guthman, Julie, A. Kimura, C. Biltekoff, J. Mudry, J. Hayes-Conroy 2014. Nutrition as a Project. *Gastronomica: The Journal of Critical Food Studies* 14(3): 34-45.

- Guyer, Jane 1981. Household and community in African studies. *African Studies Review* 24(2/3): 87-137.
- Guyer, Jane 1996. Diversity at different levels: farm and community in western Nigeria. *Africa* 66(1): 71-89.
- Hadley, Craig, and Crystal L Patil 2006. Food insecurity in rural Tanzania is associated with maternal anxiety and depression. *American Journal of Human Biology* 18: 359–368.
- Hadley, Craig and C. L. Patil 2008. Seasonal changes in household food insecurity and symptoms of anxiety and depression. *American Journal of Physical Anthropology* 135: 225-232.
- Hadley, Craig, A. Tegegn, F. Tessema, J.A. Cowan, M. Asefa, S. Galea 2008. Food insecurity, stressful life events and symptoms of anxiety and depression in east Africa: evidence from the Gilgel Gibe growth and development study. *Journal of Epidemiology and Community Health* 62(11): 980-986.
- Hadley, Craig and A. Wutich 2009. Experience-based measures of food and water security: biocultural approaches to grounded measures of insecurity. *Human Organization* 68 (4): 451-459.
- Hadley, Craig, D.A. Linzer, T. Belachew, A. Mariam, F. Tessema, D. Lindstrom 2011. Household capacities, vulnerabilities and food insecurity: shifts in food insecurity in urban and rural Ethiopia during the 2008 food crisis. *Social Science & Medicine* 73(10): 1534-1542.
- Hadley, Craig, and Deborah L Crooks. 2012. Coping and the biosocial consequences of food insecurity in the 21<sup>st</sup> century. *Yearbook of Physical Anthropology* 55: 72–94.
- Hadley, Craig, F. Tessema, A.T. Muluneh 2012. Household food insecurity and caregiver distress: equal threats to children's nutritional status? *American Journal of Human Biology* 24(2): 149-157.
- Halstead, Paul and John O'Shea 1989. *Bad Year Economics: Cultural Responses to Risk and Uncertainty*. New York: Cambridge University Press.
- Hampshire, Katherine Rebecca, C. Panter-Brick, K. Kilpatrick, and R. Casiday 2009. Saving lives, preserving livelihoods: understanding risk, decision-making and child health in a food crisis. *Social Science & Medicine* 68(4): 758–765.
- Hanrahan, Kelsey 2015. Living care-fully: the potential for an ethics of care in livelihoods approaches. *World Development* 72: 381-393.

- Harris, Leila 2015. "Challenging the romance with resilience: communities, scale, and climate change," In *Practicing Feminist Political Ecologies: Moving Beyond the 'Green Economy.'* Editors Wendy Harcourt and Ingrid Nelson. London: Zed Books.
- Harris, Marvin and E. Ross 1987. *Food and Evolution: Toward a Theory of Human Food Habits*. Philadelphia: Temple University Press.
- Harrison, Elizabeth 2000. Men, women, and work in rural Zambia. *European Journal of Development Research* 12(2): 53-71.
- Hayes-Conroy, Allison and J. Hayes-Conroy 2008. Taking back taste: feminism, food, and visceral politics. *Gender, Place, and Culture* 15(5): 461-473.
- Hayes-Conroy, Allison, and Elizabeth L. Sweet 2015. Whose adequacy?: (re)imagining food security with displaced women in Medellin, Colombia. *Agriculture and Human Values* 32: 373-384.
- Hayes-Conroy, Jessica, and A. Hayes-Conroy 2013. Veggies and viscerality: a political ecology of food and feeling." *Emotion, Space and Society* 6: 81-90.
- Heady, D. and C. Barrett 2015. Measuring development resilience in the world's poorest countries. *Proceedings of the National Academy of Sciences of the United States of America* 112(37): 11423-11425.
- Hendriks, Sheryl L. 2015. The food security continuum: a novel tool for understanding food insecurity as a range of experiences. *Food Security* 7: 609-619.
- Hesselberg, Jan, and J.A. Yaro 2006. An assessment of the extent and causes of food insecurity in northern Ghana using a livelihood vulnerability framework. *GeoJournal* 67(1): 41-55.
- Higgins, Paul A, and Harold Alderman 1997. Labor and women's nutrition: the impact of work effort and fertility on nutritional status in Ghana. *The Journal of Human Resources* 32(3): 577-595.
- Hill, Polly 1963. *The Migrant Cocoa-Farmers of Southern Ghana: A Study of Rural Capitalism*. New York: Cambridge University Press.
- Hilson, Gavin 2010. Child labour in African artisanal mining communities: experiences in northern Ghana. *Development and Change* 41(3): 445-473.
- Hjelm, Lisa and W. Dasori 2013. *Ghana comprehensive food security and vulnerability analysis*. Rome: World Food Programme.



- Hodobod, Jennifer and H. Eakin 2015. Adapting a socio-ecological resilience framework for food systems. *Environmental Studies and Sciences* 5(3): 474-484.
- Holtzman, Jon 2009. *Uncertain Tastes: Memory, Ambivalence, and the Politics of Eating in Samburu, Northern Kenya*. Berkeley: University of California Press.
- Hruschka, Daniel, D. Lende and C. Worthman 2005. Bicultural dialogues: biology and culture in psychological anthropology. *Ethos* 33(1): 1-19.
- Huff, Amber 2014. Weathering the 'long wounded year': livelihoods, nutrition, and changing political ecologies in the Mikea forest region, Madagascar. *Journal of Political Ecology* 21: 83-107.
- Huhn, Arianna 2013. The tongue only works without worries: sentiment and sustenance in a Mozambican town. *Food and Foodways* 21(3): 186-210.
- Humphrey, Carol M, Michael S Clegg, Carl L Keen, and Louis E Grivetti. "Food Diversity and Drought Survival. The Hausa Example." *International Journal of Food Sciences and Nutrition* 44 (1993): 1-16.
- Hunter, J.M. 1967. Seasonal hunger in a part of the west African savanna in Nangodi: a survey of bodyweights north-east Ghana." *Transactions of the Institute of British Geographers* 41: 167-185.
- Huss-Ashmore, Rebecca and Janis L. Goodman 1988. "Seasonality of work, weight, and body composition for women in highland Lesotho," In *Coping With Seasonal Constraints*. Editor Rebecca Huss-Ashmore, John J. Curry and Robert K. Hitchcock, pp. 29-44. Philadelphia: MASCA, The University Museum, University of Pennsylvania.
- Insel, Tom 2014. Mental health at Davos. *Directors Blog, National Institute of Mental Health*, January 27. <http://www.nimh.nih.gov/about/director/2014/mental-health-in-davos.shtml>
- Jackson, Cecile 2000. Men at work: labour, masculinities and development. *The European Journal of Development Research* 12(2): 1-22.
- Jackson, Cecile 2007. Resolving risk? Marriage and creative conjugality. *Development and Change* 38(1): 107-129
- Jackson, Paul and A.H. Neely 2015. Triangulating health: toward a practice of a political ecology of health. *Progress in Human Geography* 39(1): 47-64
- James, Gary D., P.T. Baker, D.A. Jenner, G. Ainsworth Harrison 1987. Variation in lifestyle characteristics and catecholamine excretion rates among young western Samoan men. *Social Science & Medicine* 25(9): 981-986.

- Jarosz, Lucy 2011. Defining world hunger: scale and neoliberal ideology in international food security policy discourse. *Food, Culture, and Society* 14(1): 117-139.
- Jarosz, Lucy 2014. Comparing food security and food sovereignty discourses. *Dialogues in Human Geography* 4(2): 168-181.
- Kaiser, Bonnie, E.E. Haroz, B.A. Kohrt, P.A. Boldon, J.K. Bass, D.E. Hinton 2015. "Thinking too much": a systematic review of a common idiom of distress. *Social Science & Medicine* 147: 170-183.
- Kimura, Aya H. 2013. *Hidden Hunger: Gender and the Politics of Smarter Foods*. Ithaca: Cornell University Press.
- King, Brian 2010. Political ecologies of health. *Progress in Human Geography* 34(1): 38-55.
- Kleinman, Arthur 1988. *The Illness Narratives: Suffering, Healing, and the Human Condition*. New York: Basic Books.
- Kleinman, Arthur 2012. Medical anthropology and mental health: five questions for the next fifty years," In *Medical Anthropology at the Intersections: Histories, Activisms, and Futures*. Editors Marcia C. Inhorn and Emily A. Wentzell, pp. 116-128. Durham, NC: Duke University Press.
- Kohrt, Brandon, D. J. Hrushka, H. E. Kohrt, N.L. Panebianco, G. Tsagaankhuu 2004. Distribution of distress in post-socialist Mongolia: a cultural epidemiology of yadargaa. *Social Science & Medicine* 58(3): 471-485.
- Kohrt, Brandon and Ian Harper 2008. Navigating diagnoses: understanding mind-body relations, mental health, and stigma in Nepal. *Culture, Medicine, and Psychiatry* 32: 462-491.
- Kohrt, Brandon and D.J. Hruschka 2010. Nepali concepts of psychological trauma: the role of idioms of distress, ethnopsychology and ethnophysiology in alleviating suffering and preventing stigma. *Culture, Medicine, and Psychiatry* 34(2): 322-352.
- Kohrt, Brandon, A. Rasmussen, B.N. Kaiser, E.E. Haroz, S.M. Maharjan, B.B. Mutamba, J. de Jong, D.E. Hinton 2014. Cultural concepts of distress and psychiatric disorders: literature review and research recommendations for global mental health epidemiology. *International Journal of Epidemiology* 43: 365-406.
- Konings, Piet 1986. *The State and Rural Class Formation in Ghana: A Comparative Analysis*. Boston: KPI Limited.
- Krieger, Nancy 2005. Embodiment: a conceptual glossary for epidemiology. *Journal of Epidemiology & Community Health* 59: 350-355.

- Kroger, F. 2003. "Introduction: ethnographic exploration of northern Ghana," *Ghana's North*. New York: Peter Lang Press.
- Kusakari, Y., K. Asubonteng, G. Jasaw, F. Dayour, T. Dzivenu, V. Lolig, S. Donkoh et al. 2014. Farmer perceived effects of climate change on livelihoods in Wa West district, Upper West Region of Ghana. *Journal of Disaster Research* 9(4): 516-528.
- Lacy, Scott M., D.A. Cleveland, D. Soleri 2006. Farmer choice of sorghum varieties in southern Mali. *Human Ecology* 34(3): 331-353.
- Lansing, Stephen 1991. *Priests and Programmers: Technologies of Power in the Engineered Landscape in Bali*. Princeton: Princeton University Press.
- Lappé, Frances M., J. Clapp, M. Anderson, R. Broad, E. Messer, T. Pogge, T. Wise 2013. How we count hunger matters. *Ethics and International Affairs* 27(3): 251-259.
- Leatherman, Thomas 2005. A space of vulnerability in poverty and health: political ecology and biocultural analysis. *Ethos* 33(1): 46-70.
- Lemma, Solome 2013. Against the gospel of "Africa rising." *Africa is a Country*, November 6. <http://africasacountry.com/2013/11/against-the-gospel-of-africa-rising/>
- Lende, Daniel 2012. Poverty poisons the brain. *Annals of Anthropological Practice* 36(1): 183-201.
- Lentz, Carola 1999. Changing food habits: an introduction," In *Changing Food Habits: Case Studies from Africa, South America and Europe*. Editor Carola Lentz, pp. 1-26. Amsterdam: Harwood Academic Publishers.
- Lentz, Carola 2006. *Ethnicity and the Making of History in Northern Ghana*. Edinburgh: Edinburgh University Press.
- Lentz, Carola. 2013. *Land, Mobility, and Belonging in West Africa*. Bloomington: Indiana University Press.
- Leonard, William R. 1991. Age and sex differences in the impact of seasonal energy stress among Andean agriculturalists. *Human Ecology* 19(3): 351-368.
- LeRoy, Jef, L. M. Ruel, E.A. Frongillo, J. Harris, T. J. Ballard 2015. Measuring the food access dimension of food security: a critical review of mapping indicators. *Food and Nutrition Bulletin* 36(2): 167-195.
- Li, Tania Murray 2014. *Land's End: Capitalist Relations on an Indigenous Frontier*. Durham, NC: Duke University Press.

- Linares, Olga 1997. *Power, Prayer, and Production: The Jola of Casamance, Senegal*. Cambridge: Cambridge University Press.
- Logan, Amanda and M. Dores Cruz 2014. Gendered taskscape: food, farming, and craft production in Banda, Ghana in the eighteenth to twenty-first centuries. *African Archaeological Review* 31: 203-231.
- Logan, Amanda 2016. An archaeology of food security in Banda, Ghana. *Archeological Papers of the American Anthropological Association* 27: 106-119.
- Longhurst, Robyn 2005. "Situating bodies," In *A Companion to Feminist Geography*. Editors Lise Nelson and Joni Seager, pp. 337-349. Malden, MA: Blackwell Publishing.
- Loyd-Roberts, Sue 2014. The unopened "pleasure hospital" of Bobo. *BBC News Magazine*, March 17. <http://www.bbc.com/news/magazine-26577358>
- Lu, Flora, N.L. Silva, K. Villeda, M. Sorensen 2014. Cross-cultural perceptions of risks and tenables among native Amazonians in northeastern Ecuador. *Human Organization* 73(4): 375-388.
- Luginaah, Isaac and C. Dakubo 2008. Consumption and impacts of local brewed alcohol (akpeteshie) in the Upper West Region of Ghana: a public health tragedy. *Social Science & Medicine* 57: 1747-1760.
- Luginaah, Isaac, T. Weis, S. Galaa, M.K. Nrkumah, R. Bezner-Kerr, D. Bagah 2009. "Environment, migration and food security in the Upper West Region of Ghana," In *Environment and Health in Sub-Saharan Africa: Managing an Emerging Crisis*. Editors I. Luginaah and E.K. Yanful, pp. 25-28. Amsterdam: Springer.
- Luhrman, Tanya M. 2006. Subjectivity. *Anthropological Theory* 6(3): 345-361.
- Lund, Crick, A. Breen, A.J. Flisher, R. Kakuma, J. Corrigall, J.A. Joska, L. Swartz, V. Patel, "Poverty and Common Mental Disorders in Low and Middle Income Countries: A Systematic Review," *Social Science & Medicine* 71 (2010): 517-528.
- McCabe, J. Terrence 2003. Sustainability and livelihood diversification among the Maasai of northern Tanzania. *Human Organization* 62(2): 100-111.
- McCann, James 1999. *Green Land, Brown Land, Black Land: An Environmental History of Africa, 1900-1990*. Pourtsmouth, NH: Heinemann Press.
- McCaskie, T.C. 1995. *State and Society in Pre-Colonial Asante*. New York: Cambridge University Press.

- Mace, Ruth 1990. Pastoralist herd compositions in unpredictable environments: a comparison of model predictions and data from camel-keeping groups. *Agricultural Systems* 33(1): 1-11.
- McDade, Thomas 2002. Status incongruity in Samoan youth: a biocultural analysis of culture change, stress, and immune function. *Medical Anthropology Quarterly* 16(2): 123-150.
- McElroy, Ann 1990. Biocultural models in studies of human health and adaptation. *Medical Anthropology Quarterly* 4(3): 243-265.
- Maes, Kenneth, C. Hadley, F. Tesfaye, S. Shifferaw 2010. Food insecurity and mental health: surprising trends among community health volunteers in Addis Ababa, Ethiopia during the 2008 food crisis. *Social Science & Medicine* 70(9): 1450-1457.
- McGregor, J. "Gathered Produce in Zimbabwe's Communal Areas: Changing Resource Availability and Use." *Ecology of Food and Nutrition* 33 (1995): 163–193.
- McKeon, Nora 2014. *The new alliance for food security and nutrition: A coup for corporate capital?* Working Paper TNI Agrarian Justice Program. Amsterdam: Transnational Institute.
- McMicheal, Phillip and M. Schneider 2011. Food security politics and the millennium development goals. *Third World Quarterly* 32(1):119-139.
- Madeley, John. 2000. *Hungry for trade: how the poor pay for free trade*. London: Zed Books.
- Maes, Kenneth C., C. Hadley, F. Tesfaye, S. Shifferaw 2010. "Food Insecurity and Mental Health: Surprising Trends Among Community Health Volunteers in Addis Ababa, Ethiopia During the 2008 Food Crisis." *Social Science & Medicine* 70 (9): 1450-1457.
- Mani, Anandi, S. Mullainthan, E. Shafir, J. Zhao 2013. Poverty impedes cognitive function. *Science* 341: 976-980.
- Mann, A., A. Mol, A. Savirani, N. Selim, M. Sur, E. Yates-Doerr 2012. Mixing methods, tasting fingers: notes on an ethnographic experiment. *HAU: Journal of Ethnographic Theory* 1(1): 221-243.
- Marston, John M. 2011. Archaeological markers of agricultural risk management. *Journal of Anthropological Research* 30(2): 190-205.
- Maxwell, Daniel 1996. Food security: a post-modern perspective. *Food Policy* 21(2): 155-170.

- Maxwell, Simon 2001. "The evolution of thinking about food security," *In Food Security in Sub-Saharan Africa*. Editors Stephen Devereux and Simon Maxwell, pp. 13-31. London: ITDG Publishing.
- Mendosa, Eugene 1980. The failure of modern farming in Sisala-land, northern Ghana 1967-1977. *Human Organization* 39(3): 275-280.
- Messer, Ellen 1986. The 'small but healthy' hypothesis: historical, political, and ecological influences on nutritional standards. *Human Ecology* 14(1): 57-75.
- Minc, Leah D. 1986. Scarcity and survival: the role of oral tradition in mediating subsistence crises. *Journal of Anthropological Archaeology* 5(1): 39-113.
- Minkoff-Zern, Laura 2012. Knowing 'good food': immigrant knowledge and the racial politics of farmworker food insecurity. *Antipode* 46(5): 1190-1204.
- Molini, Vasco and Paci Pierella 2015. *Poverty Reduction in Ghana: Progress and Challenges*. Report Number 101230. Washington DC: World Bank.
- Morris, Michael, H.P. Binswanger, D. Byerlee. *Awakening Africa's Sleeping Giant: Prospects for Commercial Agriculture in the Guinea Savannah Zone and Beyond*. Washington D.C. World Bank.
- Moseley, William, M. Schnurr, R. Bezner-Kerr 2015. Interrogating the technocratic (neoliberal) agenda for agricultural development and hunger alleviation in Africa. *African Geographical Review* 34(1): 1-7.
- Moss, Pamela 2005. "A bodily notion of research: power, difference, and specificity in feminist methodology," *In A Companion to Feminist Geography*. Editors Lise Nelson and Joni Seager, pp. 41-60. Malden, MA: Blackwell Publishing.
- Moss, Todd and Stephanie Majerowicz 2012. No longer poor: Ghana's new income status and implications of graduation from IDA. *Working Paper 300*. Center for Global Development.
- Naguib, Nefissa 2015. *Nurturing Masculinities: Men, Food, and Family in Contemporary Egypt*. Austin: University of Texas.
- Nanama, Siméon, and E. A. Frongillo 2012. Altered social cohesion and adverse psychological experiences with chronic food insecurity in the non-market economy and complex households of Burkina Faso. *Social Science & Medicine* 74: 444-451.
- Naylor, Rebecca 1999. Women farmers and economic change in northern Ghana. *Gender and Development* 7(3): 39-48.

- Naylor, Rosamund 2014. "The many faces of food security," in *The Evolving Sphere of Food Security*. Ed. Rosamund Naylor. pp. 3-27. New York: Oxford University Press.
- Nelson, D.R., W. Neil Adger, Katrina Brown 2007. Adaptation to environmental change: contribution of a resilience framework. *Annual Review of Environment and Resources* 32: 395-419.
- Nelson, D.R. and T. Finan 2009. Praying for drought: persistent vulnerability and the politics of patronage in Ceara, northeast Brazil. *American Anthropologist* 111(3): 302-316.
- Nelson, D.R. 2011. Adaptation and resilience: responding to climate change. *WIREs Climate Change* 2: 113-120.
- Netting, Robert McC. 1968. *Hill Farmers of Nigeria: Cultural Ecology of the Kofyar of the Jos Plateau*. Seattle: University of Washington Press.
- Netting, Robert McC. 1981. *Balancing on an Alp: Ecological Change and Continuity in a Swiss Mountain Community*. New York: Cambridge University Press.
- Netting, Robert McC. 1993. *Smallholders, Householders: Farm Families and the Ecology of Intensive, Sustainable Agriculture*. Redwood City, CA: Stanford University Press.
- Nichols, Carly 2015. Shifting production/shifting consumption: a political ecology of health perceptions in Kumaon, India. *Geoforum* 64: 182-191.
- Nichter, Mark 1981. Idioms of distress: alternatives in the expression of psychosocial distress: a case study from south India. *Culture, Medicine, and Psychiatry* 5: 379-408.
- Nightingale, Andrea J. 2015. "Challenging the romance with resilience: communities, scale, and climate change," In *Practicing Feminist Political Ecologies: Moving Beyond the 'Green Economy.'* Editors Wendy Harcourt and Ingrid Nelson. London: Zed Books.
- Noack, Anna-Lisa, and Nicky R.M. Powu 2015. A blind Spot in food and nutrition security: where culture and social change shape the local food plate. *Agriculture and Human Values* 32: 169-182.
- Norman, David W. 1974. Rationalizing mixed cropping under indigenous conditions: the example of northern Nigeria. *Development Studies* 11(1): 3-21.

- Nyantakyi-Frimpong, Hanson and R. Bezner Kerr 2015a. The relative importance of climate change in the context of multiple stressors in semi-arid Ghana,” *Global Environmental Change* 32: 40-56.
- Nyantakyi-Frimpong, Hanson and R. Bezner Kerr 2015b. A political ecology of high-input agriculture in northern Ghana. *African Geographical Review* 34(1): 13-35.
- Nyanteng, V. and A.W. Seini 2000. “Agricultural policy and the impact on growth and productivity in 1970-1995,” In *Economic Reforms in Ghana: The Miracle and the Mirage*. Editors E. Aryeetey, J. Harrigan, and M. Nisanke, pp. 267-283. Oxford: James Currey.
- Nyerges, A.E. 1997. “The social life of swiddens: juniors, elders, and the ecology of Susu upland rice farms,” In *The Ecology of Practice: Studies of Food Crop Production in Sub-Saharan West Africa*. Edited by A.E. Nyerges, pp. 169-200. Amsterdam: Gordon and Breach Publishers.
- Ohba, Asayo 2011. The abolition of secondary school fees in Kenya: responses by the poor. *International Journal of Educational Development* 31: 402-408.
- Oths, Katherine 1999. Debilidad: a biocultural assessment of an embodied Andean illness. *Medical Anthropology Quarterly* 13(3): 286-315.
- Overa, Ragnhild 2007. When men do women’s work: structural adjustment, unemployment and changing gender relations in the formal economy of Accra, Ghana. *The Journal of Modern African Studies* 45(4): 539-563.
- Owusu, Victor, Awudu Abdulai, and Seini Abdul-Rahman. “Non-Farm Work and Food Security Among Farm Households in Northern Ghana.” *Food Policy* 36 (2011): 108–118.
- Padmanabhan, Martina A. 2007. The making and unmaking of gendered crops in northern Ghana. *The Singapore Journal of Tropical Geography* 28: 57–70.
- Panter-Brick, Catherine and Mark Eggerman 1997. Household responses to food shortages in western Nepal. *Human Organization* 56(2): 190-198.
- Panter-Brick, Catherine 2003. Issues of work intensity, pace, and sustainability in relation to work context and nutritional status. *American Journal of Human Biology* 15(4): 498-513.
- Panter-Brick, Catherine and M. Eggerman 2008. Social stressors, mental health, and physiological stress in an urban elite of young Afghans in Kabul. *American Journal of Human Biology* 20(6): 627-641.



- Patel, Raj, R. Bezner-Kerr, L. Shumba, L. Dakishoni 2015. Cook, eat, man, woman: understanding the New Alliance for Food Security and Nutrition, nutritionism and its alternatives from Malwai. *The Journal of Peasant Studies* 42(1): 21-44.
- Peet, Richard 2007. *Geography of Power: Making Global Economic Policy*. London: Zed Books.
- Pelto, Gretel H. and Pertri J. Pelto 1989. Small but healthy? An anthropological perspective. *Human Organization* 48(1): 11-15.
- Pheiffer, James and Mark Nichter 2008. What can critical medical anthropology contribute to global health? *Medical Anthropology Quarterly* 22(4): 410-415.
- Pike, Ivy L. 2005. Maternal stress and fetal responses: evolutionary perspectives on preterm delivery. *American Journal of Human Biology* 17(1): 55-65.
- Pike, Ivy L. and S.R. Williams 2006. Incorporating psychosocial health into biocultural models: preliminary findings from Turkana women of Kenya. *American Journal of Human Biology* 18: 729-740.
- Piot, Charles 1999. *Remotely Global: Village Modernity in West Africa*. Chicago: University of Chicago Press.
- Plange, Nii K. 1979. Underdevelopment in northern Ghana: natural causes or colonial capitalism? *Review of African Political Economy* 15/16 : 4-14.
- Pollan, Michael 2007. *The Omnivore's Dilemma: A Natural History of Four Meals*. New York: Penguin.
- Pollan, Michael 2009. *In Defense of Food: An Eater's Manifesto*. New York: Penguin.
- Pottier, Johan 1999. *Anthropology of Food: The Social Dynamics of Food Security*. Malden, MA: Blackwell Publishers.
- Prince, Martin, V. Patel, S. Saxena, M. Maj, J. Maselko, M. Phillips, A. Rahman 2007. No health without mental health. *The Lancet* 370 (9590): 859-877.
- Quaye, Wilhemina 2008. Food security situation in northern Ghana: coping strategies and related constraints. *African Journal of Agricultural Research* 3(5): 334-342.
- Radamacher-Schulz, Christina, B. Schraven, E.S. Mahama 2014. Time matters: shifting seasonal migration in northern Ghana in response to rainfall variability and food insecurity. *Climate and Development* 6(1): 46-52.

- Ramamurthy, Priti 2003. Material consumers, fabricating subjects: perplexity, global connectivity discourses, and transnational feminist research. *Cultural Anthropology* 18(4): 524-550.
- Ramírez-Ferrero, Eric. *Troubled Fields: Men, Emotions, and the Crisis in American Farming*. New York: Columbia University Press, 2005.
- Rattray, R.S. 1932. *The Tribes of the Ashanti Hinterland*. Oxford: Clarendon Press.
- Read, Ursula, E. Adiibokah, S. Nyame 2009. Local suffering and the global discourse of mental health and human rights: an ethnographic study of responses to mental health in rural Ghana. *Globalization and Health* 5(13): 1-16.
- Richards, Audrey 1939. *Land, Labor, and Diet in Northern Rhodesia*. Oxford: Oxford University Press.
- Richards, Paul 1985. *Indigenous Agricultural Revolution: Ecology and Food Production in West Africa*. London: Hutchison Press.
- Roncoli, Carla 1994. *Managing on the Margins: Agricultural Production and Household Reproduction in Northeastern Ghana*. Unpublished Doctoral Dissertation. State University of New York: Binghamton.
- Roncoli, Carla, K. Ingram, P. Kirshen 2001. The costs and risks of coping with drought: livelihood impacts and farmers' responses in Burkina Faso. *Climate Research* 19(2): 119-132.
- Rouse, Carolyn 2014. "Don't let the lion tell the giraffe's story: law, violence, and ontological insecurities in Ghana," In *Bio-insecurity and Vulnerability*. Editors Nancy Chen and Lesley Sharp, pp. 121-142. Santa Fe: School for Advanced Research.
- Saaka, Yakuba 2001. "North south relations and the colonial enterprise in Ghana," In *Regionalism and Public Policy in Northern Ghana*. Editor Y. Saaka, pp. 139-151. New York: Peter Lang.
- Schell, Lawrence 1997. Culture as a stressor: a revised model of biocultural interaction. *American Journal of Physical Anthropology* 102: 67-77.
- Scheper-Hughes, Nancy and Margaret Lock 1987. The mindful body: a prolegomenon to future work in medical anthropology. *Medical Anthropology Quarterly* 1(1) 6-40.
- Scheper-Hughes, Nancy 1992. *Death Without Weeping: The Violence of Everyday Life in Brazil*. Berkeley: University of California Press.

- Schroeder, Richard A. 1993. Shady practice: gender and the political ecology of resource stabilization in Gambian garden/orchards. *Economic Geography* 69(4): 349-365.
- Scotch, Norman 1962. Sociocultural factors in the epidemiology of Zulu hypertension. *American Journal of Public Health* 53(9): 1205-1213.
- Scoones, Ian 2009. Livelihoods perspectives and rural development. *The Journal of Peasant Studies* 36(1): 171-196.
- Scott, James 1976. *The Moral Economy of the Peasant: Rebellion and Subsistence in Southeast Asia*. New Haven: Yale University Press.
- Scrinis, Gyorgy 2013. *Nutritionism: The Science and Politics of Dietary Advice*. New York: Columbia University Press.
- Sellen, D.W. 2000. Seasonal ecology and nutritional status of women and children in a Tanzanian pastoral community. *American Journal of Human Biology* 12(6): 758-781.
- Sen, Amartya 1981. *Poverty and Famines: An Essay on Entitlement and Deprivation*. Oxford: Oxford University Press.
- Shah, Anuj, S. Mullainthan, E. Shafir 2013. Some consequences of having too little. *Science* 338: 682-685.
- Shaw, D. John 2007. *World Food Security: A History Since 1945*. New York: Palgrave MacMillan.
- Shepherd, Andrew 1981. "Agrarian change in northern Ghana: public investment, capitalist farming and famine," In *Rural Development in Tropical Africa*. Editors Judith Heyer, Pepe Roberts and Gavin Williams. New York: St. Martin's Press.
- Shipley, Jesse Weaver 2013. *Living the Hiplife: Celebrity and Entrepreneurship in Ghanaian Popular Music*. Durham: Duke University Press.
- Shipton, Parker 1990. African famines and food security: anthropological perspectives. *Annual Review of Anthropology* 19: 353-394.
- Singer, Merrill 1993. A rejoinder to Wiley's critique of critical medical anthropology. *Medical Anthropology Quarterly* 7(2): 185-191.
- Smit, Barry and J. Wandel 2006. Adaptation, adaptive capacity and vulnerability. *Global Environmental Change* 16(3): 282-292.

- Smith, Kevin, C.B. Barrett, P.W. Box 2000. Participatory risk mapping for targeting research and assistance: with an example from east African pastoralists. *World Development* 28(11): 1945-1959.
- Smith, Kevin, C.B. Barrett, P.W. Box 2001. Not necessarily in the same boat: heterogeneous risk assessment among east African pastoralists. *The Journal of Development Studies* 37(5): 1-30.
- Songsore, Jacob. The economic recovery program/structural adjustment program: its likely impact on the 'distant' rural poor in northern Ghana," In *Regionalism and Public Policy in Northern Ghana*. Editor Yakuba Saaka, pp. 207–222. New York: Peter Lang.
- Sorsdahl, K., N. Slopen, K. Siefert, S. Seedat, D. Stein, and D. Williams 2011. Household food insufficiency and mental health in South Africa. *Journal of Epidemiology and Community Health* 65(5): 426–431.
- Spittler, Gerd 1999. "In praise of the simple meal: African and European food culture compared," In *Changing Food Habits: Case Studies from Africa, South America and Europe*. Editor Carola Lentz, pp. 27-42. Amsterdam: Harwood Academic Publishers.
- Stahl, Ann B. 2001. *Making History in Banda: Anthropological Visions of Africa's Past*. New York: Cambridge University Press.
- Stinson, Sara 1992. Nutritional adaptation. *Annual Review of Anthropology* 21: 143-170.
- Stoller, Paul. *The Taste of Ethnographic Things: The Senses in Anthropology*. Philadelphia: University of Pennsylvania Press, 1989.
- Stone, M. Priscilla, G. Davis Stone and R. McC. Netting 1995. The sexual division of labor in Kofyar agriculture. *American Ethnologist* 22(1): 165-186.
- Sutton, David E. 2010. Food and the senses. *Annual Review of Anthropology* 39: 209–223.
- Sutton, Inez 1989. Colonial agricultural policy: the non-development of the northern territories of the Gold Coast. *The International Journal of African Historical Studies* 22(4): 637–669.
- Swanpoel, Natalie 2013. Living with heritage: the potentials of and pressures on the heritage landscape of Gwollu, Upper West Ghana Region, Ghana. *Journal of Field Archaeology* 35(4): 400-411.
- Tampubolon, G. and W. Hanandita 2014. Poverty and mental health in Indonesia. *Social Science & Medicine* 106: 20-27.

- Theis, Joachim 1999. "Changing patterns of food consumption in central Kordofan, Sudan," In *Changing Food Habits: Case Studies from Africa, South America and Europe*. Editor Carola Lentz, pp. 91–109. Amsterdam: Harwood Academic Publishers.
- Thomas, R. Brooke 1997. "Wandering toward the edge of adaptability: adjustments of Andean people to change," In *Human Adaptability: Past, Present, and Future*. Editors Stanley Ulijaszek and Rebecca Huss-Ashmore. Oxford: Oxford University Press.
- Tripp, Robert B. 1981. Farmers and traders: some economic determinants of nutritional status in northern Ghana. *Journal of Tropical Pediatrics* 27(1): 15-22.
- Tsai, Alexander C, D. R. Bangsberg, E. A. Frongillo, P. W. Hunt, C. Muzoora, J. N. Martin, and S.D. Weiser 2012. Food insecurity, depression and the modifying role of social support among people living with HIV/AIDS in rural Uganda. *Social Science & Medicine* 74: 2012–2019.
- Tsai, Ming-Chang, and K.A. Senah 2013. Food security and perceived well-being among household heads in Ghana. *Applied Research in Quality of Life* 9 (2): 255–272.
- Tschakert, Petra 2007. Views from the vulnerable: understanding climatic and other stressors in the Sahel. *Global Environmental Change* 17: 381-396.
- Tsikata, Dzodzi and J.A. Yaro 2014. When a good business model is not enough: land transactions and gendered livelihood prospects in rural Ghana. *Feminist Economics* 20(1): 202-226.
- Tsing, Anna 2005. *Friction: An Ethnography of Global Connection*. Princeton: Princeton University Press.
- Tucker, Bram, M.R. Tsimitamby, F. Humber, S. Benbow and T. Iida 2010. Foraging for development: a comparison of food insecurity, production, and risk among farmers, forest foragers, and marine foragers in southwestern Madagascar. *Human Organization* 69(4): 375-386.
- van der Geest, Kees and T. Dietz 2004. "A literature survey about risk and vulnerability in drylands, with a focus on the Sahel," In *The Impact of Climate Change on Drylands With a Focus on West Africa*. Editors A.J. Dietz, R. Ruben, J. Verhagen, pp. 117-146. Amsterdam: Kluwer Academic Publishers.
- van der Geest, Kees 2011. *The Dagara Farmer at Home and Away: Migration, Environment, and Development in Ghana*. Unpublished Doctoral Thesis. Leiden: African Studies Center.

- Vercillo, Sierra, V. Kuuire, F. Armah, I. Luginnah 2015. Does the New Alliance for Food Security and Nutrition impose biotechnology on smallholder farmers in Africa? *Global Bioethics* 26(1): 1-13.
- von Grebmer, K., A. Saltzman, E. Birol, D. Wiesmann, N. Prasai, S. Yin, Y. Yohannes, P. Menon, J. Thompson, A. Sonntag 2014. *2014 global hunger index: the challenge of hidden hunger*. Bonn, Washington D.C. and Dublin: Welthungerhilfe, International Food Policy Research Institute and Concern Worldwide.
- Wanlov the Kubolor. *Human Being*. Song. Performed by Wanlov the Kubolor. 2007. Accra: Pidgen Music.
- Watts, Michael 1983. *Silent Violence: Food, Famine, and Peasantry in Northern Nigeria*. Berkeley: University of California Press.
- Watts, Michal 1988. "Coping with the market: uncertainty and food security among Hausa peasants," In *Coping with Uncertainty in Food Supply*. Editors I. de Garine and G. Harrison. Oxford: Clarendon Press.
- Watts, Michael and Hans Bohle 1993. Hunger, famine, and the space of vulnerability. *GeoJournal* 30(2): 117-125.
- Watts, Michael 2014. "Resilience as a way of life: bio-political security, catastrophism and the food-climate question," In *Bio-insecurity and Vulnerability*. Editors Nancy Chen and Lesley Sharp, pp. 145-172. Santa Fe: School for Advanced Research.
- Weaver, Lesley and C. Hadley 2009. Moving beyond hunger and nutrition: a systematic review of the evidence linking food insecurity and mental health in developing countries. *The Ecology of Food and Nutrition* 48(4) : 263-284.
- Weaver, Lesley, D. Meek and C. Hadley 2014. Exploring the role of culture in the link between mental health and food insecurity: a case study from Brazil. *Annals of Anthropological Practice* 38(2): 250-268.
- Welsh, Marc 2014. Resilience and responsibility: governing uncertainty in a complex world. *The Geographical Journal* 180(1): 15-26.
- West, Colin 2013. Documenting livelihood trajectory in the context o interventions in northern Burkina Faso. *Journal of Political Ecology* 20: 342-360.
- Whitehead, Ann 1981. "I'm hungry, mum": the politics of domestic budgeting,' In *Of Marriage and the Market: Women's Subordination Internationally and it's Lessons*. Editors Kate Young, Carol Wolkowitz and Roslyn McCullagh. London: Routledge.

- Whitehead, Ann 2000. Continuities and discontinuities in political constructions of the working man in rural Sub-Saharan Africa: the 'lazy man' in African agriculture. *European Journal of Development Research* 12(2): 23–52.
- Whitehead, Ann 2002. Tracking livelihood change: theoretical, methodological, and empirical perspectives from north-east Ghana. *Journal of Southern Africa Studies* 28(3): 575-598.
- Wiemers, Alice 2015. A time of agric: rethinking the “failure” of agricultural programs in 1970s Ghana. *World Development* 66: 104-117.
- Wiley, Andrea 1992. Adaptation and the biocultural paradigm in medical anthropology: a critical review. *Medical Anthropology Quarterly* 6(3): 216-236.
- Wilks, Ivor 1975. *Asante in the Nineteenth Century: The Structure and Evolution of a Political Order*. New York: Cambridge University Press.
- Wilks, Ivor 1989. *Wa and the Wala: Islam and Polity in Northwestern Ghana*. Cambridge: Cambridge University Press.
- Wisner, Ben, B. Piers, T. Cannon, I. Davis 1994. *At Risk: Natural Hazards, People's Vulnerability and Disasters*. New York: Routledge.
- World Health Organization. 2001. *Mental Health: New Understandings, New Hope*. Geneva: WHO.
- Worthman, Carol 1992. “Emotions: you can feel the difference,” In *Biocultural Approaches to the Emotions*. Editor Alexander Laban Hinton, pp. 41-74. New York: Cambridge University Press.
- Worthman, Carol and B. Kohrt 2005. Receding horizons of health: biocultural approaches to public health paradoxes. *Social Science & Medicine* 61(4): 861-878.
- Worthman, Carol and J. Costello 2009. Tracking biocultural pathways in population health: the value of biomarkers. *Annals of Human Biology* 36(3): 281-297.
- Wutich, Amber 2009. Intrahousehold disparities in women and men's experiences of water insecurity and emotional distress in urban Bolivia. *Medical Anthropology Quarterly* 23(4): 436–454.
- Wutich, Amber and Alexandra Brewis 2014. Food, water, and scarcity: toward a broader anthropology of resource insecurity. *Current Anthropology* 55(4): 444–468.
- Yaro, Joseph 2004. Theorizing food insecurity: building a livelihood vulnerability framework for researching food insecurity. *Norwegian Journal of Geography* 58(1): 23-37.

- Yaro, Joseph 2010. Customary tenure systems under siege: contemporary access to land in northern Ghana. *GeoJournal* 75: 199-214.
- Yaro, Joseph 2013. "The story of northern Ghana," in *Rural Development in Northern Ghana*. Editor Joseph Yaro, pp. 1-16. New York: Nova Publishers.
- Yates-Doerr, Emily 2012. The opacity of reduction: nutritional black-boxing and the meanings of nourishment. *Food, Culture and Society* 15(2): 293-313.
- Yates-Doerr, Emily 2015. Intervals of confidence: uncertain accounts of global hunger. *Biosocieties* 10(2): 229-246.
- Yates-Doerr, Emily and M. Carney 2016. De-medicalizing health: the kitchen as a site of care. *Medical Anthropology: Cross Cultural Studies in Health and Illness* 35(4): 305-321.
- Younger, Stephen 2016. Ghana's macroeconomic crisis: causes, consequences, and policy responses. *IFPRI Discussion Paper* 01497. Washington D.C.: International Food Policy Research Institute.
- Ziker, John and Michael Schnegg 2005. Food sharing at meals: kinship, reciprocity, and clustering in the Taimyr autonomous Okrug, northern Russia. *Human Nature* 16(2): 178-211.



**Appendix A**  
**Household Food Insecurity Survey**

**A. Anxiety and uncertainty about household food access:**

1. In the past month (30 days/4 weeks): Did you worry that your household would not have enough food?

**B. Insufficient quality (includes variety, preferences, and aspects of social acceptability):**

2. In the past month (30 days/4weeks): Did you or any household member eat just a few kinds of food day after day because of a lack of resources?
3. In the past month (30 days/4 weeks): Did you or any household member eat food that you did not want to eat because a lack of resources to obtain other types of food?

**C. Insufficient food intake and its physical consequences:**

4. In the past month (30 days/4 weeks): Did you or any household member eat a smaller meal than you felt you needed because there was not enough food?
5. In the past month (30 days/4 weeks): Did you or any other household member eat fewer meals in a day because there was not enough food?
6. In the past month (30 days/4 weeks): Was there ever no food at all in your household because there were no resources to get more?
7. In the past month (30 days/4 weeks): Did you or any other household member go to sleep at night hungry because there was not enough food?
8. In the past month (30 days/4 weeks): Did you or any other household member go a whole day without eating anything because there was not enough

## **Appendix B**

### **Mental Health Survey**

In the past 30 days:

- Often (more than 10 times)
- Sometimes (3-10 times)
- Rarely (1-2 times)

#### *Anxiety/Depression*

- 1) Did you have times when you were thinking too much?
- 2) Did you find it difficult to laugh and be happy?
- 3) Did you cry more than usual or feel like you wanted to cry?
- 4) Did you find it difficult to be patient?
- 5) Did you feel like your efforts were futile?

#### *Somatic*

- 6) Did you **often** have a headache?
- 7) Did you have body pains? (that you can't attribute to hard work)
- 8) Did you have a poor appetite?
- 9) Did you have difficulty falling asleep or staying asleep?
- 10) Did you grow lean?
- 11) Did your heart pound or race?
- 12) Did you get dizzy?

#### *Cognitive*

- 13) Did you get easily confused?
- 14) Did you find it difficult to make decisions?

## **Appendix C**

### **Economic Activity Survey**

#### **Health**

In the past month have you had to pay for medical care or any medicines?

#### **Animal Rearing**

In the past month have you sold any animals?

In the past month have you given any animals away?

In the past month did you buy any animals?

In the past month, did you lose any animals to theft or disease?

#### **Food**

In the past month did you sell food from your farm?

Why did you sell the food?

In the past month did you buy any food for your household?

#### **Education**

In the past month have you had to pay any fees related to your children's schooling?

How much and for what?

#### **Money Earning Activities and Marketing**

Besides animal rearing, did you earn money in the past month?

How much did you earn from your money-making activities?

Did you already spend this money?

#### **Social Capital and Money**

In the past month did anyone ask to borrow money or in kind from you?

Were you able to lend? How much?

In the past month did you have to borrow money from any individual?

Have you paid your debt? How?

In the past month did you borrow money from the susu?

Have you paid your debt? How?

Did you have any difficulties paying community/group fees

## Appendix D

### Exhaustive List of Activities/Items For Categorizing into Socio-Economic Status

- 1) Self-employed/apprenticeship
- 2) Owning shop
- 3) Trading shea
- 4) Day labor work in Wa
- 5) Salary work/government work 500 GHS/month salary
- 6) Salary work/government work 1,000 GHS/month salary
- 7) Production of charcoal
- 8) Selling firewood
- 9) Petty trading 200 GHS capital
- 10) Petty trading 500 GHS capital
- 11) Petty trading 1,000 GHS capital
- 12) Hiring farm labor 100 GHS/season
- 13) Hiring farm labor 500 GHS/season
- 14) Owning 5 cattle
- 15) Owning 20 cattle
- 16) Owning 5 goats
- 17) Owning 20 goats
- 18) Owning 50 goats
- 19) Farming 2 acres groundnuts
- 20) Farming 5 acres groundnuts
- 21) Farming 10 acres groundnuts
- 22) Farming 2 acres maize
- 23) Farming 5 acres maize
- 24) Farming 10 acres maize
- 25) Cement floor
- 26) Zinc roof
- 27) Plastered walls
- 28) Cement block house in progress
- 29) Cement block house completed
- 30) Renting house
- 31) Carpet
- 32) Suitcase with lock
- 33) Refrigerator
- 34) Smock (sewing machine)
- 35) Smock (hand sewn)
- 36) Seamstress/tailor made clothing
- 37) Imported clothing (15 GHS)
- 38) Imported clothing (50 GHS)
- 39) Fan

- 40) TV
- 41) Foam mattress
- 42) Stuffed chair
- 43) Motorbike
- 44) Upgrading motorbike
- 45) Motor tri-cycle
- 46) Enamel bowls (30 GHS)
- 47) Enamel bowls (90 GHS)
- 48) Enamel bowls (120 GHS)
- 49) Conducting charity in the community
- 50) Meal diversity (Three different meals a day for one week)
- 51) Educating children through Junior Secondary School
- 52) Educating children through Senior Secondary School