

MODIFIED STATES:

SOVEREIGNTY AND THE ETHICS OF CROP BIOTECHNOLOGY IN KENYA

by

LOWERY D. PARKER

(Under the Direction of Amy Trauger)

ABSTRACT

This dissertation examines the politics of philanthropy in Kenya, exploring the creation of class identities within agricultural biotechnology partnerships. Proponents of these partnerships, such as the Gates Foundation, argue that genetically modified crops are a solution to hunger and poverty for smallholder farmers in Africa, but in Kenya, my research shows that the story is more complicated. The main beneficiaries of investment in crop biotechnology are urban, middle class Kenyans working for private partnering institutions as well as the international agribusiness corporations who develop GM crops. This dissertation illustrates the tangled and overlapping tensions within humanitarian narratives in the colonial present, arguing that the struggle for economic justice through ‘innovative agriculture’ implies both resistance to and integration with state/corporate strategies. While contesting imperialism might include developing local capacity for new technologies, it can also demand that local farmers be used as test subjects for corporate-run biotech projects. This research suggests that the primary outcome of these projects is the continued separation of rural and urban citizens into groups with differing citizenship benefits.

INDEX WORDS: Philanthropy, crop biotechnology, GMOs, Kenya, class, sovereignty

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LOWERY D. PARKER

B.A., Vanderbilt University, 1999

M.I.P., University of Georgia, 2011

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LOWERY PARKER

Major Professor: Amy Trauger

Committee: Amy Ross
Josh Barkan
Pablo Lapegna
Maria Navarro

Electronic Version Approved:

Suzanne Barbour
Dean of the Graduate School
The University of Georgia
December 2017

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CHAPTER 1

INTRODUCTION

“All lives have equal value.” This is the governing ideal of the Bill and Melinda Gates Foundation, and the primary text on the Foundation’s homepage, written in bold above the subtitle “we are impatient optimists working to reduce inequity.” Is the Gates Foundation suggesting through its guiding statement that it is taking up the challenge of structural and institutional inequality in an international context? If so, how? This dissertation investigates how we can think about philanthropic claims of help in the context of international agricultural development, an arena the Gates Foundation has recently entered with a passion, bolstered by its immense financial resources. The Foundation’s goal is to reduce hunger and poverty across the globe by forming partnerships with corporations, national governments, and targeted populations (such as smallholder farmers) to harness innovative methods of agricultural production. One innovation that has received significant grant funding from the Foundation is the Water Efficient Maize for Africa (WEMA) project, a large-scale attempt to improve African maize through the development of new technologies for crop breeding. The most “innovative” of these technologies involves transgenic breeding to produce what are known as genetically modified crops.¹

¹ Transgenic crop breeding occurs when genetic material (DNA) from another species is artificially introduced into embryonic cells of a particular crop in laboratory conditions. The resulting crops are often called GM crops. The WEMA project uses conventional breeding methods, marker-assisted breeding, and transgenic breeding to achieve desired traits in maize.

Though the WEMA project is headquartered in Kenya, it faces opposition to the release of transgenic crop varieties due to a ban on GMOs in place since 2012.² This research analyzes the conflicting narratives of crop biotechnology in this context, as both a potential tool for addressing global hunger and as a troublesome object that engenders multiple forms of governance. It illuminates the tension between philanthropic claims of equality and the technologies of “help” that instead create and maintain differentiation. As market-based development is promoted globally (Easterly 2006, Moyo 2009), the Gates Foundation seeks new and innovative ways to use private investment and best business practices to address national political agendas and international development concerns, specifically targeting hunger and poverty. The potential problem is that the presence of a non-democratic, non-transparent funding agency can actually exacerbate the inequity it seeks to solve,³ creating different types of development subjects and assigning them different political and economic value. This unevenness is the basis of structural violence.

Background

In 2008, the Gates Foundation granted the African Agricultural Technology Foundation (AATF) an initial \$35.9 million to fund the WEMA project “to develop drought tolerant maize for small farmers in Africa.”⁴ The AATF is an NGO headquartered in Nairobi, Kenya, but the WEMA project, now the largest maize-breeding pipeline in Africa, is situated across five African

² GM (genetically modified) or GE (genetically engineered) most often refer to transgenic technologies that manipulate crop DNA. These terms are not very specific, however, and result in misunderstandings in both academia and the media when characteristics of specific crops (i.e. cotton) or specific traits (i.e. insect-resistance) are aggregated into one category of GMO (genetically modified organisms).

³ See: Open Letter to African Governments re: secrecy of the WEMA project (<http://acbio.org.za/activist/WEMA-Project-Shrouded-in-Secrecy-Open-Letter-to-African-Governments.pdf>)

⁴ <http://www.gatesfoundation.org/How-We-Work/Quick-Links/Grants-Database/Grants/2008/02/OPP48106>

countries.⁵ It has both conventional and transgenic breeding components, with 30 conventional varieties of maize already available to the public (Schurman 2017). In October 2012, the Foundation granted the AATF an additional \$52.9 million “to develop and distribute improved maize hybrids for Africa that are drought-tolerant, insect-resistant, and higher yielding.”⁶ The goal of the Foundation’s attempts at seed improvement is “to reduce hunger and poverty for millions of farming families in Sub-Saharan Africa and South Asia by increasing agricultural productivity in a sustainable way.”⁷ This is part of a historical commitment on the part of philanthropic organizations, most notably the Rockefeller Foundation and its push for a “Green Revolution,” to increase crop yields in order to combat hunger and poverty around the globe.⁸

A common argument in the agricultural development community goes as follows: Africa was “skipped over” by the initial Green Revolution and therefore lacks the technology improvements in seed, fertilizer, and machinery that Southeast Asia benefited from in the 1960s (Conway 1997).⁹ The majority of Africa’s poor and hungry populations are smallholder farmers, those who farm small plots of land primarily for subsistence. It is these farmers who struggle the most and require help. Though there are many proposed solutions to lift farming families out of hunger and poverty, the primary objective is increasing productivity. The solution to poverty in this narrative is for farmers to grow more food. This can be done by harnessing new technologies (such as improved seeds) and connecting farmers to reliable markets. The path to achieving this relies on forming partnerships between governmental, private sector, and donor organizations to maximize the collective impact of interventions. In this narrative, GM crops have risen to the top

⁵ Kenya, South Africa, Mozambique, Tanzania, Uganda. See: Appendix A for a diagram of the WEMA partnership structure.

⁶ <http://www.gatesfoundation.org/How-We-Work/Quick-Links/Grants-Database/Grants/2012/10/OPP1019943>

⁷ <http://www.gatesfoundation.org/What-We-Do/Global-Development/Agricultural-Development>

⁸ For a history of the Green Revolution as “an answer in search of a riddle,” see: Cullather, N. (2010). *A Hungry World: America’s Cold War battle against poverty in Asia*.

⁹ But see: Olsson 2017 and Patel 2013 for an alternative narrative

as a potential solution to large-scale humanitarian and environmental problems surrounding agriculture. Advocates of GM crops claim that they are one tool with which to address problems of productivity, such as disease and pests, in order to “feed the world.”

Is this true? Can GM crops alleviate poverty and hunger? The short answer is that there is little scientific evidence to prove this. Very few studies explicitly address the link between the adoption of GM crop technologies and household poverty effects, especially in Africa. The most cited studies (Smale et al. 2009, Subramanian and Qaim 2010) argue that GM crops hold *promise* for poor farmers, but that further investigation is required to justify the claim that GM crops are pro-poor. Most “promise” studies focus on aggregate yield and income effects, and make the assumption that increases in yield and/or income translate to a reduction in poverty over the short to medium term (Falck-Zepeda et al. 2013, Smale 2016, Qaim and Kouser 2013). They also assume that GM technology is the key to *sustainable intensification* (i.e. growing more food on less land) which will translate to positive environmental outcomes and solve the problem of feeding a growing population (Foley et al. 2011).

However, the primary evidence for GM crops leading to increased farmer income is in the production of Bt cotton,¹⁰ not food crops (Ali and Abdulai 2010, Subramanian and Qaim 2009, Huang et al. 2002). And those farms that are producing GM crops for “the world” are not smallholder farmers in Africa. Globally, the four major biotech crops are soybean (51% of acreage), maize (30%), cotton (13%), and canola (5%) (James 2016). The primary uses for GM soy and maize are as livestock feed and in processed foods, and these crops are grown mainly by large-scale farmers in the US, Brazil, and Argentina (Ibid). These crops are developed for only two traits, herbicide-tolerance (crops designed to tolerate chemicals such as glyphosate) and

¹⁰ *Bacillus thuringiensis* (Bt) is a bacteria in the soil used as a biological pesticide. The Bt trait is common in GM crops bred for insect resistance.

insect-resistance. These are not poor friendly, meaning small-scale, technologies.¹¹ The nuanced literature about the potential poverty-alleviating effects of GM crops notes that in order to help the poor, the focus of GM research must shift – away from traits, production methods, and ownership models that benefit large-scale producers and corporations and toward crops that benefit small-scale third-world farmers (Lipton 2001, Stone 2010).

So, why does it matter that the Gates Foundation promotes and funds the development of GM crops in Africa? There are two reasons. One, the promise of GM crops to solve issues of hunger and poverty is outsized in relation to their actual potential, both at present and in the future.¹² And, two, not everyone wants them. In November 2012, the Kenyan Health Minister called for a complete ban on the importation of GM crops in Kenya.¹³ This was one month after the Gates Foundation increased its WEMA funding to \$85 million. There is much debate about the legality of the ban due to the fact that it was never published in the official newspaper of the Kenyan government, *The Gazette*, and there have been claims that it never existed at all.¹⁴ No one section of the government takes credit for its creation. Though the Minister of Health announced the ban, it is not clear that it was a Cabinet decision. This makes it easy for opponents to challenge the legitimacy of the ban, but very hard to repeal. Importantly for an academic analysis, it also makes it hard to think about “the Kenyan government” as a coherent entity when it comes to resource governance. Despite these tensions, the ban is effective in the sense that the

¹¹ See: Fisher (2016) and Stone (2010) for an explanation of why GM crops are not scale-neutral, as advocates claim them to be.

¹² McAfee (2003, 2004, 2008) discusses the GM crop “miracle” myth as well as the risks they entail. Stone shows how discourses of productivity mask the true causes of hunger and poverty (2002, 2005) and summarizes the literature on “impacts” on smallholder farmers (2010).

¹³ Though in her speech, Health Minister Beth Mugo called for a halt on the importation of GMOs, it is unclear what that means for consumption of locally produced GM crops. Narratives have fluctuated since 2012 from all sides, including the National Biosafety Authority (NBA). As of September 2017, the NBA claims that the ban is only on importation (*Business Daily* 9.15.17). Previously, KUBICO (a consortium of research scientists advocating for the commercialization of GM crops) claimed the ban was on importation and consumption (*Daily Nation* 12.22.16)

¹⁴ Interview with Senior Research Fellow in Agricultural Biotechnology at the University of Nairobi (7.28.15)

National Biosafety Authority (NBA) regulates the entrance of GMOs into the country – ships with GM crops no longer dock in Mombasa, the main port of Kenya. But the pro-biotech community has been vigorous in supporting a repeal of the ban, sending biotech ambassadors to East Africa for speaking tours, paying for Kenyan Ministers of Parliament to travel to the US for educational tours, and continuing to fund biotech projects in Kenya.¹⁵ The Gates Foundation is the main financial resource behind this community (See: Appendices B and C).

The WEMA project is not one small, isolated project in an otherwise vast philanthropic portfolio. It is part of a much larger and more complex effort to change African seed systems, with biotechnology as a primary component. An important part of the Gates Foundation’s strategy is the Alliance for a Green Revolution in Africa (AGRA), to which it has given \$620,814,558 since 2006. Although AGRA does not directly fund biotech projects, its goal is to put in place the seed, fertilizer, finance, and market systems necessary to transform African agriculture in the image of the Green Revolution. These are the pathways through which GM crops will be commercialized (Thompson 2014, ACB 2012). The Gates Foundation partners with many different “life sciences” corporations in this work, including DuPont/Pioneer, Syngenta, and Monsanto. It also funds the Cornell Alliance for Science (\$5.6 million grant in 2014), a global communications initiative dedicated to advancing access to crop biotechnology in developing nations. Visiting Fellows at the Alliance, such as Mark Lynas, have conducted traveling tours of East Africa to advance “pro-science” narratives supporting the commercialization and use of GM crops.¹⁶ Additionally, the Foundation supports research and publication on biotechnology policy through the International Food and Policy Research Institute

¹⁵ ISAAA (International Service for the Acquisition of Agri-biotech Applications) and OFAB (the Open Forum on Agricultural Biotechnology, housed within the AATF) funded the trip to the US for Kenyan MPs.

¹⁶ The narrative that GMOs are safe for consumption. (Lecture at University of Nairobi, July 2013). Lynas also spoke in Tanzania and Uganda on this trip. According to Lynas, he was funded by the Gates Foundation.

(IFPRI) and the Sandra Rotman Centre in Toronto.¹⁷ It has also contributed \$24 million to developing permissive biosafety legislation in Africa through the African Biosafety Network of Expertise (ABNE).

To put the Gates Foundation's support of crop biotechnology in Kenya in context, a recent timeline of breeding for insect and drought resistance in Kenya is needed. At KALRO (the Kenyan Agriculture and Livestock Research Organization), the effort to develop improved maize seed goes back decades¹⁸, but transgenic breeding projects are more recent. In 1999, the Novartis Foundation (soon to become Syngenta) funded the Insect Resistance Maize for Africa (IRMA) project in Kenya, a partnership between CIMMYT¹⁹ and the Kenyan Agricultural Research Institute (KARI, later KALRO). From 1999 to 2003, the IRMA project developed the basic tools needed to create GM insect-resistant maize in Kenya, including identifying source lines for Bt genes and identifying local germplasm into which the genes could be inserted. According to the Head of the Biotechnology Center at KALRO, the initial IRMA results showed about 60% effectiveness, not enough of an improvement to take to farmers. So the project decided to secure private support. In 2004, Monsanto came on as a partner and added its MON810 (Bt insect-resistant maize) event.²⁰ Although the project was able to develop and release conventionally bred, open-pollinated varieties (OPVs), it failed to deliver any Bt-based varieties. The primary

¹⁷ In an investigation of the Foundation's agricultural funding, GRAIN found that (outside of funding to the UN, CGIAR, AGRA, and AATF) 80% of agricultural grants went to organizations in the US and Europe. In terms of university and research grants, 79% went to grantees in the US and Europe. It also found that over 75% of the NGOs granted funding to do agricultural work were in the US.

¹⁸ The Kenyan government first started a maize research center in 1955. KARI was founded in 1979, and incorporated into KALRO in 2013.

¹⁹ The International Maize and Wheat Improvement Center (known by its Spanish acronym), launched as an international organization in 1966, but begun as a pilot project of the Green Revolution (funded by the Rockefeller Foundation). The Gates Foundation and the AATF are both donors to CIMMYT, with the Foundation giving approximately \$720 million to CGIAR (of which CIMMYT is a member) between 2003-2014. Source: African Center for Biodiversity (2015).

²⁰ An event is the insertion of a particular transgene into a specific location on a chromosome. The term "event" is often used to differentiate genetically engineered crop varieties (University of Nebraska, AgBiosafety glossary).

reason was a lack of clarity of ownership, resulting in distrust between the public and private partners involved in the project (Mabeya and Ezezika 2012). Farmers who had high expectations of new and improved seeds were disappointed when the resulting product turned out to be privately owned, and CIMMYT was not able to commercialize the seed. At this point, support for IRMA was low, and KARI approached the Gates Foundation to revive it. Instead, in 2008, the Foundation funded WEMA, a project based on the IRMA model.

In addition to WEMA, the Gates Foundation also funded IMAS (Improved Maize for African Soils) through a \$19.5 million grant in 2010. IMAS is a partnership with DuPont/Pioneer focused on increasing nitrogen-efficiency in maize. The Foundation has also funded the Drought Tolerant Maize for Africa (DTMA) project (via a \$67 million grant from 2007-2014) and its corresponding seed-scaling system (DTMASS, begun in 2014). In 2016, it started the Stress Tolerant Maize for Africa (STMA) project to develop varieties with resistance and tolerance to drought, heat, pests, and disease. STMA is a continuation of DTMA and IMAS. These projects are all being conducted in partnership with CIMMYT and the US Agency for International Development (USAID). Of these, WEMA, IRMA, IMAS, and STMA all have transgenic breeding components, and DTMA is the source of much of the germplasm for WEMA (ACB 2015).

It might seem odd that this is such a political issue in Kenya. Drought and stem borers are perpetual concerns to domestic maize production (De Groote 2002), and the recent advance of the fall armyworm and MLN (Maize Lethal Necrosis) across East Africa is putting additional pressure on Kenyan maize farmers. Economic connectivity in this context (with Monsanto and the Gates Foundation) is supposed to mean that Kenyan farmers have more tools at their disposal to address these types of production problems. But the argument from those opposed to GM

crops in Kenya is that the corporate/industrial nature of GM crops is as much of a threat to food security as a particular crop's interaction with climate and disease (African Food Sovereignty Alliance, Growth Partners Africa, African Center for Biodiversity, La Via Campesina). This challenges the dominant narrative in agricultural development that hunger and poverty should be seen as a function of production and attempts to situate the debate over agricultural biotechnology in its social context. This dissertation supports the alternative narrative by bringing problems of low yield and limited market access into the lens of the colonial present (Gregory 2004), and shining light on the historic separation of rural and urban African communities.

The debate between these narratives is not simply an academic exercise. Both those who support GM crop development and those who oppose it mobilize the idea of colonialism to argue for the implementation of specific policies related to biotechnology. The colonial nature of crop biotechnology appears as two competing narratives – for opponents, the increasing corporate control of African food systems by multinational corporations resembles the colonial appropriation of capital and exploitation of natural resources. These groups prefer to keep the ban in place, arguing for “precautionary” policies until the potential impacts of GM crops come into clearer focus. For advocates of genetic engineering, preventing the dissemination of new seed technologies that could “save the world from hunger” is seen as an attempt to keep African countries from prospering under globalization. These groups ally themselves with “permissive” regulatory regimes, like those in the US, and continue to push for the development of biosafety laws as a necessary step to commercialization. Though the ban generates significant media

coverage dealing with the proper role and functioning of regulatory institutions in Kenya,²¹ this dissertation understands biosafety policy as only one form of governance engendered by GM crops. Just as important are the daily practices of partnership within crop biotechnology projects that structure power relations and create technological subjects.²²

Seeds and subjects

This dissertation argues that what is called “the GMO debate” in Kenya is not about safety or hunger, and is not an issue of one advocacy group being “anti-science” while the other wants simply to apply scientific principles to crop production. It is about the vulnerability of both the poor and the middle class in a world increasingly governed by market rules. It is about the ethical claims that go along with that middle class identity. And, it is about finding new ways to subsidize corporations through state/corporate power. This research links the production of GM seeds to the production of class difference, illustrating how colonial relationships of power are re-inscribed in the present. It is an argument against commonly heard statements that attempt to separate science and politics as a form of power.²³ It is an attempt to show how and why social context matters when considering the role of GM crops in society, particularly when GM crops are promoted as solutions to hunger for “Africa.” The argument (which, for decades, has been

²¹ Which involves a network of overlapping institutions, including the Kenyan Plant Health Inspectorate Service (KEPHIS), the National Environmental Management Authority (NEMA), the National Biosafety Authority (NBA), the Ministry of Agriculture, and the Ministry of Health.

²² Partnership in the content of uneven power relations, which “operates as a more insidious, covert, and subtle expression of donor power” (Mercer 2003, p. 743). See also: Mohan (2002).

²³ These “pro-science” and “anti-emotion” narratives are ubiquitous in the biotech community in Kenya, and carry both gendered and anti-political messages. Many are in reference to the Minister of Health, Beth Mugo, who announced the ban in 2012, suggesting that she made an emotional decision because of her own experience with cancer. The AATF Regulatory Affairs Manager said at an OFAB meeting: “That is why decisions about the health and safety of new crop varieties should be based on scientific evidence, not driven by political wrangling and baseless “moral” arguments.” The Cornell Alliance for Science was created to advance these narratives.

made by anthropologists, sociologists, human geographers, and agroecologists) is that there is no such thing as technical/scientific intervention into agricultural systems that is not also political.

This research empirically supports relational theories of development, detailing the economic, political, and personal violence that philanthropic partnerships can create and maintain. It is not an argument against all private funding of humanitarian projects, but an illustration of what a particular project, WEMA, looks like *in practice* in a post-colonial context. Performing development as innovative agriculture under conditions of economic imperialism produces a range of socio-political outcomes not often promoted by philanthropic donors and their partners in development projects. These include disciplining farmers, scientists, and other development practitioners into accepting and reproducing neoliberal modes of governance, conditioning institutions to facilitate the process, and strengthening corporate power at the expense of vulnerable populations. But it can also include other strategies, such as developing local technology, to contest the same economic imperialism.

Case study

My research is focused on the largest maize breeding project in Africa (WEMA) and the politics surrounding one particular transgenic event within the project – what I will call Bt Tego maize. This is maize that was conventionally bred for drought tolerance over many years through a partnership between national research institutions in Kenya (KARI/KALRO) and the international maize center (CIMMYT). They call this DroughtTEGO™ maize. The Bt gene donated by Monsanto was added for insect resistance in 2011. Confined field trials began in 2014, and the WEMA project recently won a long-fought battle for approval to conduct national

performance trials in Kenya, which are necessary before commercial release.²⁴ If it receives regulatory approval after the trials, this maize varietal will be sublicensed from the AATF to seed companies for sale. As of November 2017, it is still unclear whether or not this maize will be legal to consume in Kenya under the ban.

In order to answer some of the most pressing questions about GM crops in Kenya, such as whether or not their development is a colonial pursuit and whether or not they have the potential to help smallholder farmers, it is necessary to illuminate the power structures of the WEMA partnership and analyze in greater detail how Bt Tego maize functions both in and out of the field. This requires detailed knowledge of each of the WEMA partners and the narratives they mobilize to do the work of agricultural governance in Kenya. As part of a qualitative investigation into the nature of this partnership, I conducted 22 semi-structured interviews with WEMA project partners in Nairobi, attended biotechnology conferences and meetings (which resulted in an additional 28 observable presentations), and made field visits to partner headquarters, university biotech facilities, and crop testing sites.²⁵ I recorded and transcribed interviews and took extensive notes while engaged in participant observation (field visits, conferences, and meetings). From 2012 to the present, I also gathered data on narratives of GM crops in Africa via online archives: WEMA partner websites, Kenyan media outlets, scientific research publications, and social media. From these texts, I conducted a narrative analysis of the politics of GM crops in Kenya, showing how claims to humanitarianism are used to reproduce dominant forms of poverty governance such as philanthrocapitalism.

²⁴ Approval was given by the NBA in 2016, then revoked, then reapproved in September 2017.

²⁵ Field visits (2015): Kenyan Agriculture and Livestock Research Organization (KALRO) biotechnology headquarters, CIMMYT headquarters, MLN screening facility in Naivasha, University of Nairobi, Kenyatta University, USAID at the US Embassy, Open Forum on Agricultural Biotechnology (OFAB) meeting, African Agricultural Technology (AATF) headquarters, ILRI offices (Program for Biosafety Systems)

Arc

This dissertation was conceived of as part of the growing body of research on Relational Poverty (Elwood et al. 2016, Lawson and Elwood 2014, Glassman 2011, Silvey 2009, Ballard 2012). Building on a long history of critical work on poverty/development, this research follows the shift from thinking about “the poor and poor other” to thinking about relationships of power and privilege.²⁶ It is concerned with how poverty is produced by powerful others (Mosse 2010) and governed as a problem (Roy and Crane 2015). Relational Poverty research traces (Lawson et al. 2015):

1. How poverty is produced through dispossession or adverse incorporation into capitalist economies
2. The cultural and political production of class through discourses of difference
3. Performances of class identity
4. The governance of liberal individualism

In other words, poverty is not simply economic violence, it is also the production of difference through policy, discourse, and performance. In keeping with these research goals, this dissertation includes three empirical chapters that address (respectively) **structural economic violence**, **class subject formation**, and the **privatization of poverty governance** in Kenya.

Using the concept of sovereignty to ask who controls resource use and how, these chapters trace the differing forms of poverty governance in international agricultural development that are facilitated by philanthropic partnerships.

²⁶ <http://depts.washington.edu/relpov/>

Chapter outline

After an introduction to the WEMA project in this chapter, Chapter two situates the project within current debates on poverty, development, and governance. Chapter three then lays out the qualitative methods of data collection used to conduct a narrative analysis of the WEMA partnership. The next three chapters form the empirical argument in line with the Relational Poverty literature outlined above.

Chapter four focuses on economic violence, telling us how life sciences corporations like Monsanto are seeking a *spatial fix*²⁷ through philanthropy. In the US, their place of origin, GM crops have saturated the market and are facing a public opinion that is increasingly uneasy with the landscape of industrial agriculture. The “Big Six” agro-chemical corporations are cutting investments in GM crops, and the immediate future of global crop biotechnology looks uncertain – until we look to Africa. The Gates Foundation is pumping millions of dollars into research, development, and advocacy of GM crops across the continent, even in countries that have legislated against them. The promise is of a partnership between smallholder farmers and corporate innovation/finance that will result in economic growth, moving farmers out of poverty. But what we see in Kenya is that the WEMA partnership is uneven from the beginning, and economic connectivity ends up benefitting corporations more than the poor. By “donating” genes, Monsanto inserts itself into publically-owned seeds and paves the way to claim future intellectual property rights. It is able to do this through the humanitarian narrative aggressively advocated by the Gates Foundation. In short, the Foundation is subsidizing Monsanto’s humanitarian intervention in Africa to keep crop biotechnology alive in centers of accumulation

²⁷ David Harvey’s (1982) concept of the spatial fix concerns the geographical strategies that capital must undertake to address its inherent, cyclical crises. He most notably detailed changes in the physical landscape resulting from the expansion/restructuring of the production process, but later focused on the necessary changes in technologies and organizational form, political subjectivities, institutions, etc. that are also outcomes of crisis.

(i.e. the US). This is how GM crops become a “global” phenomenon. This chapter shows how philanthropy provides the cultural and material conditions for a spatial-temporal fix that could allow Monsanto to weather its current vulnerability in order to reassert market profitability down the road. The outcome for smallholder farmers is not as certain.

Chapter five looks at the process of subjectivation²⁸ more closely, linking the production of GM crops to the production of class difference. Rather than seeing the development of GM crops as something driven by hunger or science, this chapter argues that biotech researchers in Kenya can be understood as performing a middle class identity of care. Many of them come from backgrounds in which hunger and poverty are motivating factors for their interest in crop biotechnology, typically framed as a desire to achieve “food security” for rural populations. This desire connects with a middle class performance of scientific expertise derived from a moral humanitarianism and dependent on a discourse of the poor other. The poor are first constructed as targets, then partnered with, and finally asked to be deserving, entrepreneurial subjects in the free market – while the technological subject is subsidized through education and employment. Their improvement (the poor) is measured in how readily and thoroughly they accept the market as a vehicle of “self-help.” The middle class defines itself against this poor subject, re-inscribing class boundaries through political/cultural identity. Additionally, Kenyan researchers feel the pull of class identity through an attraction to political order. They desire a functioning rule of law and scientific processes which can facilitate economic growth. In this respect, the technological subjectivation that creates innovators (the middle class) and entrepreneurs (the poor) can be seen as a response to a non-providing state. Economic connectivity through the WEMA project produces economic fear and anxiety as part of the philanthropic grant process.

²⁸ Butler, following Foucault, asks how the self comes into being and what the costs of this might be (Youdell 2006)

Chapter six looks to a primary political effect of the WEMA project, the privatization of agricultural governance, to tell us why this particular strategy of economic expansion works in Kenya. Though narratives of partnership make it seem as if the well-being of smallholder farmers is the primary humanitarian concern, the actual partnership in this case is between the AATF, Monsanto, and the Gates Foundation. GM crops are not grown in Kenya, and therefore, do not provide any benefit to farmers at present. What the WEMA project does do is support the narrative that Africa is now a catalyst in the global economy. It gives Kenyan researchers hope that they can develop their own technologies that might help them combat economic imperialism (in this case, the technology transfer narrative). This requires plant breeders and advocates of crop biotechnology to submit to the logic of capital as well as to help create humanitarian targets (“poor farmers”) to incorporate into market-based systems. Additionally, the Kenyan government opens up its institutions (like KALRO, its agricultural research system) to US donors to be disciplined by their best business and best science practices. The subjects created through these partnerships, both poor and middle class, are used to cover what have always been failures of “the market”²⁹ and embed market-based ideas deeper in proposed solutions. The result is that certain groups are included and others excluded from citizenship benefits. This duality mirrors colonial modes of governance and facilitates resource extraction for US corporate interests.

Conclusion

It is not new to argue that narratives of “technology transfer” and “modernization” carry colonial weight. Neither is it surprising to note the continued focus on technical intervention (i.e.

²⁹ Specifically, the Structural Adjustment Programs (SAPs) of the 1980s and 1990s

improved crop technologies) by development practitioners, rather than a concern for political rights such as access to land (Wolford 2010, Li 2014, Trauger 2017). What this dissertation seeks to address is the disconnect between humanitarian narratives of care and the technologies of help that instead produce differentiation and unevenness.

The passion that surrounds the “GMO debate” did not begin in 1996 with the introduction of the first GM seeds. GMOs can better be understood as politicized objects in a continuing agrarian struggle. They shine a light on a much older debate about the nature of scientific inquiry itself. What counts as valid knowledge, how is it produced, and for whom? Those who wish to separate science and politics do so as a mode of power, one that historically results in the triumph of the technical over the political. This *anti-political* (Ferguson 1994) stance is also anti-science in that it ignores the social context of GM crops outside of a narrow definition of human and environmental safety. This dissertation argues that integrative science means thinking about breeding techniques *and* property – thinking about poor farmers *and* how they are produced. Following Mamdani (1996), it reasserts that *the native question* (how a minority European colonial power could rule over a larger indigenous population, directly and indirectly) is key to understanding what it means to investigate the colonial present in Africa. The problems of poverty in Africa are based in a culture of care that cannot be separated from race and class issues under capitalism. In other words, investigating poverty means centering capitalist institutions as the producers of inequality, not targeting smallholder farmers as inefficient or unruly outliers in the production of modernity. Yet, development is a contested process, and the tensions it manifests result in a variety of outcomes. Development projects produce economic violence, consenting subjects, and unevenness, but they also produces different strategies for seeking to address the ongoing problems of colonialism.

CHAPTER 2

DEBATES: POVERTY GOVERNANCE AS DEVELOPMENT

The statistics on hunger and poverty in the world are staggering. According to the World Food Programme (WFP), 795 million people do not have enough food to live “healthy lives,” and 705 million live in extreme poverty.¹ The statistics for Africa often suggest a much worse picture than other continents. As an example, 82% of the population of Madagascar and 77% of the Democratic Republic of the Congo live in extreme poverty.² Currently, three African countries (South Sudan, Nigeria, and Somalia) are experiencing famines as defined by the Integrated Food Security Phase Classification (IPC). These statistics represent real and severe effects on the bodies and minds of the poor. Along with stories of those living under conditions of hunger and poverty, statistics like these are used by the international agricultural development community to argue for increased aid, technology, and market access for those with the greatest need, typically defined as smallholder farmers and those displaced by civil conflict.³ But the “poverty alleviation through market integration” narrative has some real problems itself, mainly that the historical record shows differentiation, not alleviation, as an outcome of market

¹ Extreme poverty is defined as living on less than \$1.90 a day. This is not only an extreme measurement, but because it is a measurement of consumption, it does not account for differences in purchasing power across countries. Poverty is both more broadly present and more deeply felt in more ways than this statistic can allow.

² Compared to the highest percentages in SE Asia, for example, with Bangladesh at 44% (Roser and Ortiz-Ospina 2017).

³ Good examples of these stories are in the books of Roger Thurow (*Enough: Why the world's poorest starve in an age of plenty* and *The first 1,000 days: A crucial time for mothers and children and the world*). Thurow travels the country advocating for increased US investment in agricultural development as a solution to hunger. He has been an invited speaker at UGA as well as at the AIARD (Association for International Agriculture and Rural Development) conference in DC. This year he testified before the House Foreign Affairs Subcommittee on Africa, arguing for “the American imperative to lead the way” to end hunger.

connectivity. As smallholder farmers are incorporated into capitalist agriculture they often experience an increase in violence (being pushed off productive land, exploited for their labor, separated from communal forms of resilience, subjected to famine, etc.), resulting in increased vulnerability (Li 2014, Wolford 2010, Watts 1983, Davis 2001). Access to capitalist markets and resources may not always lead to the oppression of poor farmers, but what it does lead to – uneven benefits across social and environmental landscapes (Glover 1987, 1990) – is not often highlighted in development programs seeking the "end of poverty" (Sachs 2006).

Poverty is located, both materially and in the imagination, in places like rural Africa, while wealth and the obligation to provide care are increasingly located in billionaire entrepreneurs. According to a 2017 report by Oxfam, the world's eight richest people (including the richest man in the world – Bill Gates) control the same amount of wealth as half of the world's population (Hardoon 2017). Rather than question the political and economic systems that allow for this "obscene" inequality, the development community continues to manipulate ideas of development to fit within those systems. "Philanthrocapitalism" is seen as the connecting of these two disparate groups of people – the super-poor and the super-rich – in a symbiotic partnership that will pull people out of poverty while at the same time boosting national and corporate economic growth. What is missing in these narratives is not only how powerful actors help produce poverty, but also the middle class actors who help shape and are shaped by philanthropic poverty governance.

This dissertation explores the conditions under which poor/rich partnerships are possible, investigating these types of connections and who desires them. It illustrates what development looks like in the context of an extreme concentration of poverty and wealth. During the second half of the 20th century, international development presented itself as a transfer of goods and

services from rich to poor countries, an idea that is becoming less useful under the current, historically specific form of globalization, which requires new models to think about the shifting conditions of state/corporate power. It is also an idea that is increasingly challenged by development economists, who rely on previously unmeasured “non-financial transfers” such as debt cancellation and unrecorded capital flight to argue for the purposeful underdevelopment of poor countries by the rich (Global Financial Integrity 2015, Hickel 2017). This work follows in the footsteps of dependency theorists such as Walter Rodney (*How Europe Underdeveloped Africa* 1972) who explain how the West’s scientific and technological advances are the result of connection (destruction and exploitation) with Africa.

Contesting uneven and misrepresented economic relationships is a necessary component of rethinking development, as is reconsidering spaces of power and control in ways that can open up traditional geographies of development. What this means is paying “sustained attention to the interactions of enclosure, boundaries, and subjectivities” that govern global poverty and development (Sidaway 2007, p. 345). To do this, this dissertation focuses on a specific form of poverty governance called philanthrocapitalism – the belief that the same economic systems that produce poverty and extreme wealth can be used to manage them (Rogers 2011).

The “new” philanthropy

The last 10 years have seen a growth in the literature on philanthrocapitalism. Coined in *The Economist* (2006) and given legs by the success of Matthew Bishop and Michael Green’s 2008 book, *Philanthrocapitalism: How the rich can save the world*,⁴ the idea that philanthropy is more effective when it harnesses the power of the market has become dominant in the

⁴ The subtitle of the 2008 version (published in the UK by Bloomsbury Press) was changed in 2009 when released in the US to: “How giving can save the world.”

international development industry. More specifically, as Rogers (2015, p. 533) points out, the newly rich are interested in establishing their own foundations that mirror the “experimental, innovative, technology-oriented solutions” that helped create their wealth. Though the term is only a decade old, critics point out that the concept is not new. McGoey (2012) argues that conflating markets and morals (the idea that “doing good and doing well” are integrally linked) in discourses of political economy dates back to at least Adam Smith, and has been taken up by many economists since to argue for the natural efficiency and charitability of markets. McGoey (2012, 2014) also notes that philanthropists have been modeling their giving on corporate practices for over a century, and the current focus on “strategic investing” or “venture philanthropy” is better framed as a continuation of the efforts of mid-19th century reformers to attach charity to observable benefits, rather than a radically new emphasis on measurable results (something the Gates Foundation places heavy faith in).

In the last five years, McGoey (2012) and others have begun calling for a more critical engagement with philanthrocapitalism (and philanthropy more broadly) from the social sciences.⁵ The primary reason for this call is not due to a functional shift in philanthropic relations to the rest of capitalist society, but to the sheer amount of money that is now being given and to the “outspokenness of the self-interested motivations of charitable gestures” (McGoey 2012, p. 193). The extremely wealthy have multiplied, are highly motivated to intervene, and have no problem linking their charitable actions to financial motives or being perceived as drivers of social change (McGoey 2014). The literature consistently points out that we are in a “golden age of philanthropy,” exemplified by Warren Buffet’s donation of \$30 billion to the Gates Foundation in 2006 – the largest recorded donation in history (Hay and

⁵ See special symposium on “The Politics of Philanthrocapitalism” in *Society*, Vol. 48 (2011).

Muller 2014).⁶ One of the reasons for this age, of course, is that wealth inequality has reached unprecedented levels, with the number of billionaires in the world going from 306 to 1826 in the last 15 years (Morvaridi 2016).

Rogers (2015) additionally makes the claim that the social sciences are not taking philanthropy seriously enough. This implies that there is something about philanthrocapitalism that requires a different form of analysis than say, those prompted by the uneven development of capitalism literature.⁷ There is some debate over whether philanthrocapitalism represents a shift in, or a new paradigm for, charitable giving. Most of the literature follows Holmes' (2012) argument that "traditional" philanthropy functions as a method of compensation for the gross inequalities produced by capitalism – a way that philanthropists can offset their exploitative labor practices and environmental destruction in order to control the narratives of capitalism and subdue political dissent.

Holmes and Rogers both see the "new" philanthropy as a specific feature of venture capitalism. For Holmes (2012), it is not just the practices of strategic investing (i.e. data-driven decision making) that make this a new mode of engagement, but the rationale behind it. New philanthropy requires both the adoption of corporate business practices and an ideological acceptance of the authority of corporate strategy. This has been referred to as the "neoliberalization of philanthropy" (Guthman 2008, Tedesco 2015). While I am not convinced

⁶ Buffet's donation (in 2006 dollars) was larger than all charitable donations of John D. Rockefeller and Andrew Carnegie combined.

⁷ Marxist geographers (and others) have critiqued capitalism as producing unevenness and perpetuating inequality (i.e. Peet 1975, Smith 2008, Massey 1995), and have produced detailed critiques of capitalist institutions including corporations and the state (Dicken 2015, Brenner 2004). There is additionally a large body of literature on the intimate relationship between the public and private sphere and the embeddedness of political and economic systems derived from Polanyi, Gramsci, Poulantzas and others.

that *neoliberal* philanthropy is different from *traditional* philanthropy,⁸ Rogers (2015) assertion that the focus of these newer foundations “on developing ways of doing things rather than on getting things done” rings true (p. 536). In other words, a primary goal of current philanthropic efforts is on remaking public institutions and conditioning development actors in the image of capitalism.

So how do philanthropists and their supporters continue to argue that huge amounts of money given by interested individuals to problems of their own choosing can override the political, economic, and social constraints to solving problems of inequality created by capitalism? McGoey (2014) has directly addressed this in terms of philanthrocapitalism, challenging the idea that corporations and private investors are plugging gaps in development financing created by waning state power. What she suggests instead is that governments are the ones subsidizing the philanthrocapitalists. The visibility of actors like the Gates Foundation (particularly at the point of market access) helps obscure the government support necessary to make any investment viable, and perpetuates the idea that private actors are inherently more innovative and successful at leveraging financing (McGoey 2014). Philanthropic capital does not help redistribute wealth, nor does it address the fundamentally oppressive social structures created by capitalism. What it does do is redirect rights claiming strategies away from governments and toward the institutions (i.e. corporations) who have created inequality in the first place (Mitchell and Sparke 2016, Kohl-Arenas 2015, Nally and Taylor 2015). This is, of course, in direct conflict with the claims made by philanthrocapitalists and their supporters (Bishop and Green 2015).

⁸ The idea that the Rockefeller Foundation was just a “funder of programs” rather than interested in social change is a difficult argument to make considering the historical literature on the Green Revolution. See: Olsson (2017), Patel (2013).

If the broader literature on philanthrocapitalism is still debating whether or not there is potential for poverty alleviation to come from philanthropic giving, the geographical and anthropological literature suggests that at the very least we should question the claim of the “redistribution” of wealth as unproblematic. Hay and Muller (2014) lay out a number of areas in which philanthropy requires critical analysis, including the need to investigate the ideological and social position of “the givers” who are basically redirecting what would be public money to their own interests via multiple forms of tax arrangements. They additionally point out the spatial variegation of philanthropy, noting problems with attempts to cause social change in “other” places, particularly in terms of shaping or enacting development policy. This is part of what they term “hyper agency” (Hay and Muller 2014, p. 638), the idea that the rich want to be “architects” rather than supporters of philanthropic projects. Rogers (2015) argues that Bill Gates and his foundation are the paradigm of this philanthropic model.

Though social scientists have recently begun paying more attention to the scope and outcomes of philanthrocapitalism, more work is needed on the specific processes of social change created through philanthropic projects, as well as an explanation of how the narrative of philanthrocapitalism continues to dominate conversations about development funding even when the outcomes of philanthropic projects run contrary to their claims. A notable example of this type of work is Erica Kohl-Arenas’ (2015) *The Self-Help Myth: How Philanthropy Fails to Alleviate Poverty*, which details how poverty has historically been produced and maintained through philanthropic practices in California’s central valley. By coopting grassroots initiatives and turning them into “non-threatening” programs that fit organizational goals, Kohl-Arenas describes how private foundations suck the radical impulses out of “self-help” practices and prevent real, systemic change. Notably, one of the main problems with the philanthropic

structure for Kohl-Arenas is that grantees are accountable not to their communities, but to the donors themselves. In terms of African agriculture, Carol Thompson's (2012, 2014) work on AGRA (the Alliance for a Green Revolution in Africa) shows how and why Africa's genetic wealth is being appropriated through philanthrocapitalism, and provides a framework for understanding philanthrocapitalism as a systemic change to public service provision – replacing spaces of publically developed seeds with private business practices and control. What this dissertation seeks to add to this literature is an understanding of how philanthropy is changing the “ways of doing things” in the development community – in other words, the processes, not the products, of defining and addressing poverty.

What is poverty?

Andrew Carnegie, in an essay entitled “Wealth” (published in the *North American Review* in 1889), outlined two principles that continue to guide philanthropic practice to this day: One, that charity is not the answer to poverty, and two, that personal transformation is necessary to achieve lasting social change (Nally and Taylor 2015). As Nally (2011) points out, these ideas can be traced to classical liberal thinkers such as Thomas Malthus and Jeremy Bentham, who believed that the purpose of poverty alleviation was to rehabilitate the poor, ridding them of the personal “vices” that caused poverty. Malthus (1798) was specifically concerned with conditioning the behavior of the poor through hunger, driving them to be more industrious members of society. This conceptualization of poverty was shared by John D. Rockefeller Sr. and used to justify significant intervention in 20th century society with the goal of tackling the “root causes” of poverty and inspiring “social autonomy” (Nally and Taylor 2015, p. 52).

Over the years, this specifically American idea of philanthropy has manifested in the notion of *self-help* – the “pull yourself up by your bootstraps” narrative that places the responsibility for poverty on the poor themselves. Kohl-Arenas defines the “self-help” ideology as “the enduring belief that entrenched poverty is the result of social and economic isolation that has trapped poor people within a culture of poverty marked by hopelessness and self-harming behaviors” (2015, p.2). In other words, capitalism is the solution to poverty, not the cause. The characterization of poverty as an individual failing that requires a change in personal motivation and decision-making was the basis of the Rockefeller Foundation’s agricultural development program, both in the American South and internationally.⁹ Nally and Taylor (2015) detail how agricultural development (as a huge philanthropic undertaking) came to be as much a program of social adjustment as a technical mission. Thus, American philanthropy has always been about conditioning both individuals and institutions.

The international agricultural development community of today is still heavily based in self-help ideology, and posits “the poor” as people who require help due to a perceived lack – of resources, of good governance, of individual skills, etc. This way of thinking misunderstands how poverty is produced as well as how societies choose to characterize social differentiation, specifically in terms of citizenship and wealth (Ballard 2012). Geographers and others have argued for a relational worldview that implicates the non-poor in the production of poverty under global capitalism (Harrison 2011; Hart 2002, 2004; Gidwani 2002, and those affiliated with the Relational Poverty Network, including Vicky Lawson and Sarah Elwood). While this work shares a history with dependency theory, it is more attendant to analyses of those marginalized by development debates and focused on new forms of regulating poverty. If poverty is relational,

⁹ See: Olsson (2017) and Patel (2013) for a discussion of Green Revolution chronology, and Cullather (2010) for how the Foundation began the process of international agrarian modernization.

it is neither “innocent” nor an “original condition” (Harrison 2011), and therefore, not the responsibility of those who are produced as poor. Rather than focus on “the poor and poor other,” relational poverty scholarship analyzes relationships of power and privilege,¹⁰ and illustrates how poverty is both produced and governed as a problem (Roy 2015). This framing is important as a way to rethink sites of poverty as not only relational, but multiple and subjective (Roy and Crane 2015). As Crane (2015) argues, “how we think and act on poverty informs how we imagine what is possible, and what is just.” This means understanding not only how economic ties can underdevelop certain areas, but also how “the poor” come to be defined and targeted as an undifferentiated group.

Ballard (2012, p. 564) provides three (conflicting, yet connected) ways of understanding development and its “primary objects”: development *without* the poor, *for* the poor, and *by* the poor. In doing so, he clarifies that although “the poor” can be used as shorthand for people who experience material deprivation, it is also (following Harrison 2011) a “thin social categorization.” Though “the poor” might exist statistically, as abstract aggregations of people based on income per person, infant mortality, caloric intake, etc., their social existence is quite different, based on lived experiences of ethnic marginalization, social injustice, and predatory state practices (Harrison 2011). How particular societies define, name, and represent “the poor” affects their everyday existence, conditioning their relationship to the violence of global capitalism (Desai 2002, Anderson and Broch-Due 2000).

So, how and why are those who are supposedly the primary target of development “written out of the story, spaces, and benefits of development” as Ballard (2012) asks? The Marxist literature tells a story of worker exploitation and underemployment based on a surplus

¹⁰ <http://depts.washington.edu/relpov/about-us/>

global labor supply, which translates into poor working conditions, especially for migrants or those who do not share in citizenship rights (Chatterjee 2004, Li 2009, Harvey 2010). The role of the (nation)state is much debated here: Was it ever a basis for social membership? Or have rights and benefits always been spatially differentiated according to social group? A major thread in the literature suggests that with increasing economic connectivity, citizenship benefits accrue to those more valuable in the economy, concentrated not by bounded territory, but around particular investments (Smith 2011, Li 2009, Ong 2006). “The poor,” in the philanthropic context, are used to secure outside investment aimed at addressing poverty, but are then excluded from actual development benefits. Poverty is normalized in the context of state function (the state is supposed to help marginalized groups), but the poor are not seen as appropriate recipients to ensure national economic growth. This role goes to the “middle class” as “exemplars of modernity” who work hard and can inspire others to lift themselves out of poverty (Tompa, 2009, p. 597). As Ballard (2012, p. 567) notes, a recent African Development Bank report (2011) argues that “it would be more effective to tackle poverty by expanding the middle class” than by addressing the problems of the poor.

How to view poverty

One way of understanding poverty in this context is as an *excess*, rather than a lack, of connection with the West (Sidaway 2003). Forms of interconnection that have produced poverty and social differentiation in Africa include colonial rule by European nations and natural resource extraction by transnational corporations (Bond 2006). Colonialism (as the foundation for poverty in African states) required the “othering” of groups of people both within and outside national boundaries as a strategy for domestic governance. The poor are produced in African

states via specific forms of economic violence, such as wealth depletion, that have persisted since independence. Gregory (2004) labels this “the colonial present” – the process by which colonial “pasts” bleed into contemporary violence. Gregory (2004, p. 11) shows how “colonialism was always as much about making other people’s geographies as it was about making other people’s histories,” bringing a necessary geographical context to the ongoing violence of what are often framed as humanitarian efforts by the West. Vandana Shiva (2005) has argued in the agricultural context that biopiracy of wild seed varieties contributes \$66 billion annually to the US economy. Bond (2006) details the many additional ways in which this violence occurs: skilled labor migration/cooptation, oil and mineral depletion with associated rent outflows, uneven trade relationships, forced debt by global institutions, and the like. “The poor” is therefore a designation of both material and imagined importance.

What is development?

The problem of global poverty calls forth a response that (at least since World War II) has been labeled *international development*. Despite critical interventions from the 1980s on,¹¹ current conceptualizations of international development remain essentially imperial projects. Development aims are technical solutions to problems (both ecological and social) in certain locations, not always concerned with why those problems exist in the first place. There have been shifts, however, in the spaces of development since WWII. Individual bodies have replaced nation-states as the primary target, and the concern with “the West” has shifted to a global focus on “the rest.”¹² What these shifts suggest is a move away from bounded conceptualizations of

¹¹ Emanating from “Third World political ecology” and critical development studies. Some examples: Blaikie and Brookfield (1987), Peet and Watts (1993, 1996), Ferguson (1994), Sen (1981, 1999)

¹² Yet, discursively, the West is continually centered as the norm. See: Ferguson, N. (2011). *Civilization: The West and the rest*. New York: Penguin Books.

territory and sovereignty (Agnew 1994) implicated in national development and toward relational concepts such as modes of production, financial flows, connection, and entanglement (see Tsing 2005). Two themes stand out when thinking about development and philanthropy in this context. One is that development has mainly been conceived of as a Western project (whether formulated as part and parcel of capitalism or a response to it). And the other is that Western science and technologies (both political and technical) are integral to the creation and maintenance of the development project in discourse and practice. These themes are implicated in a variety of ways in discussing the relationship between colonialism and capitalism. For example, development is thought to be both the deepening of capitalist relations, and/or a critique of them. While critique of the practices and processes through which capitalist violence is committed remains a necessary project, Spivak argues that “we cannot *not* desire development” as it is “the dominant global denomination of responsibility” (cited in Wainwright 2008, p. 11). Though development is completely inadequate, it is also absolutely necessary (Wainwright 2008). For Wainwright, this constitutes an aporia, an “impossible passage” through which we must conceive of development as both within and outside of capitalism (2008, p. 10)

The broad ontological question here concerns development as either an intervention or an unfolding, that is, whether it is something desired or something “natural” (Wainwright 2008). If we see capitalism as development in the sense of its unfolding on a global scale, then “the violent effects of capitalist social relations are normalized and unjust geographies become hegemonic” (Wainwright 2008, p. 8). If we see development as change, then this implies a willful intervention by something outside of development (justifying something like humanitarianism). These meanings of development are often conflated in both discourse and practice, making it hard to distinguish between capitalism and development as concepts as well as to theorize socio-

spatial change. According to Wainwright (2008), the relationship between “the state” and capital is *the* problematic of post-colonial development, in that national economic development was the promise of newly independent states, but an uneven and global capitalist system made this promise impossible to pursue. Though the failure of development is “global,” it still remains a state problem to fix (Wainwright 2008, p. 9).

Gillian Hart (2010) takes up this argument from a Gramscian perspective to argue that the distinction between immanence and intervention is often overdetermined in development theory. Opposing the narrative in which development as intervention was present at the birth of industrial capitalism (to contain its unfolding), Hart (2002a, 2010) argues for a dialectical relationship between what she labels “big D” and “little d” development. Big D Development describes the “multiply scaled projects of intervention” in the context of Third World decolonization, while little d development refers to “the development of capitalism as geographically uneven but spatially interconnected processes of creation and destruction, dialectically interconnected with discourses and practices of Development” (Hart 2010). Drawing on Polanyi’s (1944) concept of the “double movement” and Gramsci’s (1971) attention to “relations of force at various levels,” Hart (2010) argues that opposing tendencies to development are contained within capitalism, rather than externally (p. 120). Hart’s relational development theory allows her to argue for Development as the articulation of ideas and practices from multiple sources and sites. Neoliberal forms of capitalism do not arise in the “core” and spread to the “periphery” – they are formed through “power-laden practices and processes of spatial interconnection” (Hart 2010, p. 129). Development is not simply a Western project that has spread to the rest of the world, but rather a response to the crises of colonialism that emerged from “an effort to deal with challenges from below” (Ibid, p. 135).

Gidwani (2002) argues similarly that “we cannot make a priori assessments of development outcomes without understanding the freedoms they enable or curtail” (p.1). This is due not only to the plurality of development forms, but more importantly to the relational aspect of the construction of modernity. If we understand modernity and development as co-constitutive processes between “core” and “periphery” – rather than simply the product of European colonialism – we may critique development in particular time and spaces, rather than as a universal given (Gidwani 2002). Like Hart, Li (2007) shows how development interventions (unwittingly) have significant effects, not in achieving their stated goals, but in mobilizing political actors and helping them develop and articulate a critique embedded in their actions (p. 155). In other words, development programs can stimulate political challenge. In this framing, power is not external to practice.

These relational approaches to development are partly a response to the post-development literature of the 1990s, which critiqued “development” as a discursive practice exported from the hegemonic Bretton Woods institutions in the post-World War II era (Escobar 1995). Though Foucauldian analyses of development discourse do call us to question how development is constructed, they have also been critiqued as totalizing and monolithic, simply replacing the object of development with its negation (Wainwright 2008, Gidwani 2002, Hart 2010). As described above, the facile rejection of development is not a useful response to Spivak’s aporia. Where Foucault seems more effective is in thinking about the governing practices that target development landscapes (more below). Li (2007) investigates the governmental rationalities of sovereignty and discipline that shape the field of power in which development (or, what she terms “the will to improve”) exists in Indonesia, focusing on the

practices that structure the development enterprise. She identifies three dimensions for translating the “will to improve” into specific programs (Li 2007, p. 7):

1. *Problematization*, or the identification of “deficiencies” that need to be rectified
2. *Rendering technical*, which includes defining a field to be governed with specifiable limits, making the boundaries of the field visible, and devising techniques to mobilize the forces that have been “revealed”
3. *Anti-politics* (following Ferguson 1994), or how rendering technical also renders programs “non-political” and focuses on the capacities of the poor, rather than the practices by which one group impoverishes another.

Through an investigation of these processes, Li (2007) seeks to “prize open expert knowledge and expose its limits” (p. 2). Thus, she gives us a method for thinking about the power/knowledge systems that structure development interventions as well as their relational constitution (see also: Mitchell 2002).

Similarly, Donald Moore (2005) focuses on competing practices of “spatial discipline, sovereignty, and subjection” in postcolonial Zimbabwe to argue for an analytic concept of “articulated assemblages” (p. 24). This analytic framework focuses not only on the violence of governing, using Gramsci (1971) to understand political economic relations, discourse, and cultural politics, but also on the articulation of power relations with prior formations. Moore (2005) is against identifying a unified logic that must be erased or overcome, and instead focuses on “sedimentations of subjection and spatiality” in an effort to illuminate interactions between forms of power and techniques of the self (p. 8). Humans are displaced as the subject of this model, but power relations still critical to understanding what Moore (2005) terms “selective sovereignties,” or the mutual production of power, subjects, and territory (p. 220). These works seem to address Hart’s (2010) critique of neo-Foucauldian accounts of development that rely on ideal types, and instead relate how struggle, negotiation, and contestation are active forces in the production of power (p. 132). All of these works agree that the tensions and contradictions of

development are being produced in practice in the current context, and it is in this everyday practice that new political openings might appear.

Development as connectivity

One way to view the history of development in Africa is to see it first as a colonial encounter, which transitioned to state-led development after independence, and currently exists in a historically and geographically specific version of globalization (sometimes called “neoliberal”). The current interest in Africa as an investment destination, source of raw materials for industry, and frontier for new markets is part of a long history of African “integration” into the capitalist system. Beginning in the 19th century (and building on the earlier violence of the slave trade) there was a marked change in the economic, political, and cultural structure of African society brought about by colonization (Hochschild 1998, Mamdani 1996, Bates 1981). While the colonial mission of resource extraction for the development of European nations differs in many ways from the current efforts of both corporations and states to secure resources, noting the historical links provokes important questions about current development discourses. For example, how are the logics and practices behind this engagement similar to and different from those of the 19th century? And what does this mean for modern day forms of dispossession and violence? As capitalism continues to produce poverty and hunger, it becomes necessary to explore the relationship between colonialism and development in the current economic context of “Africa Rising.”¹³ This narrative is distinctly different from just a decade ago, when Africa

¹³ *The Economist* (12/3/2011) and *TIME* (12/3/2012) both ran cover stories entitled “Africa Rising” in which they outlined the factors that have led to rapid growth in Africa over the last decade as well as a corresponding optimism in development. These factors include a commodity boom from 2000-2008 (which led to higher revenues from natural resource exports), Chinese investment in infrastructure, an enthusiasm for communications technology, and increasing democracy and “good government.” Africa RISING (Research in Sustainable Intensification for the Next Generation) is also a USAID development program.

was labeled as “hopeless” after years of disinvestment and decline (*The Economist*, 13 May 2000).

Whether one sees development as part of a continuum of colonial exploitation or as a necessary solution to inequality and environmental degradation (or both) suggests very different political projects for addressing the crises of capitalism to which it is so intimately linked. Yet, to avoid totalizing and “hopeless” discourses, it is necessary to think about development not only as a capitalist process, but also as a discursive project and embodied practice that has specific historical and geographical relationships to power. Different mechanisms of capital accumulation imply different outcomes of dispossession, with different consequences for social, political, and economic relations (White et al. 2012). The “new” scramble for Africa might repeat some of the same colonial practices in certain places and organize new ones in others. One of the most noted differences between colonization and the current period of economic globalization is in the territorial nature of direct political rule versus the dispersed, or “overlapping,” sovereignties created by the multiple zones of authority that characterize global governance today (Ong 2006). Following Pádraig Carmody (2011) then, perhaps it is better to refer to the current engagement as a scramble *in* Africa rather than a scramble for Africa.

Studying development means not only investigating how overlapping power structures work to produce unevenness, but in continually questioning who benefits. Humanitarian narratives that suggest increased connectivity, trade, and economic growth for the poor need to be vigorously investigated, as the historical outcomes of development suggest an expansion of both state and market power, but less success in “helping” the poor. Following Ferguson (1994, p. 356), we must always remember that development was a “central organizing concept” of the modernization age – not a project of poverty alleviation, but a principle method of maintaining,

reinforcing, and expanding state power. Focusing solely on state power, however, is insufficient to understand the shifting forms of poverty governance enabled by philanthrocapitalism.

What is governance?

How might we characterize the relationship between state/corporate power and development in the colonial present? The post-World War II concern with development depended on the centrality of the nation-state and the embrace of internationalism. But this conceptualization of government and sovereignty is not the only, nor necessarily the most effective, way of viewing power relations today, especially in what is called “postcolonial Africa.” As Ferguson (2010) points out, “twentieth-century left common sense” is based on the idea of a worker and a nation-state that are solid, coherent, and central to governance (p. 169).¹⁴ But in Africa, these ideas are not very useful. Not only are most workers not (nor likely to become) formal wage laborers, but “the social” part of the social welfare state is primarily funded through philanthropy, not the state itself (Ferguson 2010, p. 168). The billionaire philanthropists of today, along with the rest of the development community committed to “making poverty history,” assume a nation-state that is not present in many parts of Africa. And they continue to advance sovereignty narratives based on territorial control of populations. Political geographers have challenged territory as the basis of sovereignty and advanced relational theories of power more suited to a world characterized by high economic and political connectivity (Agnew 1994, 1999, 2009; Ong 2006; Sidaway 2003; Emel et al. 2011). This is not to deny the power of borders and boundaries, but to make space for interrogating more diffuse networks of power.

¹⁴ Ferguson (2010) defines “the Left” as a politics of negation and disdain, “organized, in large part, around a project of resisting and refusing harmful new developments in the world” (p. 166).

The “hyperglobalist” literature argues that globalization results in a weakening of state power, as corporations and transnational organizations siphon off modes of governance through private funding of public services.¹⁵ This framing not only misrecognizes the relationship between states and corporations as one of conflict, but also perpetuates the idea of “the state” as a coherent formation with singular goals. The fragmented and contradictory nature of “the state” as an arena for competing factions has long been acknowledged by social theorists concerned with cultural hegemony (Poulantzas 2000), and even more recently illustrated in terms of the biotechnology debate. Fitting (2011), for example, argues that “thinking about the state as the making or unmaking of certain forms of political rule draws our attention to the struggles and alliances” within and between different social groups (p. 38). In the biotech debate, she illustrates how these competing factions often work at cross-purposes (Fitting 2011).

Mamdani (1996) describes the specifically African form of the state, a dual state power structure, created during the colonial period – direct (exclusionary) rule over the city and indirect incorporation of the peasant through “tribal” rule. This state was not formed by agrarian structure, but by race, and through oppression. This did not change with independence. Though the state was de-racialized, it was not democratized. Mamdani explains this “citizen/subject divide” as the process through which citizenship benefits were distributed or withheld as colonial governance. In trying to determine whether or not the Kenyan state is accountable to its citizens, both poor and not, it is necessary to remember that inclusion and exclusion are not just historical strategies of African colonial states, but constitutive of present day governance.

Additionally, geographers have challenged the necessity of continuing to theorize state power as such when the state form seems obsolete for understanding new geographies of global

¹⁵ See: Ohmae (1990, 1995) for a representative argument. But see Martell (2007) for a discussion of how globalization theory is progressing in the field of international affairs.

capitalism (Barkan 2011). Barkan (2013) focuses instead on the mutual constitution of capitalism and liberal states, arguing that corporate power is the basis for sovereignty in liberal democracies. Critical state theorists in geography and elsewhere have also sought to decenter the state in discussions of power, rather focusing on strategic interactions (Jessop 2008) that take place in institutions and urban spaces (Brenner 2004). Political geographers have illustrated the utility of thinking about the *production of scale* as a conceptual tool in analyzing the restructuring of state power under globalization (Cox 1997, Swyngedouw 1997, Brenner 1999). This includes rejecting scale as an ontological given (for example, in hierarchical framings of local-national-global) as well as emphasizing the relational aspects of socio-spatial dynamics. These framings prevent the false state/capital dichotomy from being reified, and, in fact, are used to show how state power is central to the *re-regulation* processes at the heart of neoliberal reforms (Peck and Tickell 2002).¹⁶

Understanding development means paying attention not only to the role of the state and corporations, but to other forms of power mobilized in the service of philanthrocapitalism – searching for “a vocabulary of power and politics not erected around the problem of sovereignty” (Coleman and Grove 2009, p. 489). Coleman and Grove (2009, p. 491) point out that “it was the discourses and practices of government in place of what was *supposed* to be sovereignty that led Foucault to his discussion of *biopolitics* in the first place.” Foucault’s contribution was in thinking about the reconfiguration of state power through the concept of government. For

¹⁶ This is not to deny the transformation of states under neoliberalism. According to McKay (2012, p. 302), humanitarian organizations in Africa have been linked to the neoliberal transformation of the state (Comaroff and Comaroff 2000, Ferguson 2006), and ethnographies have shown how “market logics” pave the way for transnational organizations to take on governmental functions (Elyachar 2005, Feldman 2008, Li 2005, Nguyen 2010, Paley 2001, Pfeiffer 2004).

Foucault, the idea of a weak or strong state is irrelevant; governance is about how situated power works.

For example, it makes sense that Kenyan subjects would seek geopolitical power through scientific knowledge and/or material gain in the form of grant funding. But in seeking these resources, they are subject to the bodily processes of development as well. They are called to be responsible, technical, normative subjects at the same time that they produce development rationalities. Understanding how these bodies articulate with discursive development regimes is essential to identifying their “consent” (Gramsci 1971) to hegemonic discourses of technology transfer. Moore (2005) argues “hegemony hinges on discursive production, leading subjects to consent by identifying their particular interests with a general, more universalizing one” (p. 11). In other words, disciplinary, or normalizing, power is not incompatible with the idea of securing consent. Hegemony is always contested, and its maintenance requires multiple forms of power, even if Gramsci (1971) saw the state as the most important arena for its articulation. What Moore’s statement also alludes to, though, is that self-discipline concerns the individual subject, where Gramsci was concerned primarily with the collective.

In his later writings on governmentality, Foucault (2009) makes a shift from talking about disciplinary forms of power (*technologies of self*) to what he termed *biopower*. Biopower is a political technology that allows for the governance of populations through an explicit concern for fostering life, rather than the threat of death (Foucault 1990). Thinking about the biopolitical nature of consent¹⁷ provides a necessary supplement to the more “realist” forms of power with which resource appropriation is typically associated, as well as addressing the explicit theorization of how “power shapes the conditions in which lives are lived” (Li 2007, p. 25). With

¹⁷ In Gramscian (1971) terms, how hegemony is secured.

the turn to biopolitics, Foucault foregrounds the techniques of *making life* as integral to the development of capitalism. Power is still diffuse and tangled here, but more concerned with the practices of regulating life. This kind of thinking challenges the state/capital binary as well as shows how discourses produce certain kinds of subjects and societies (McCarthy and Prudham 2004).

This allows us to get at Barnett's (2005) critique of governmentality as a complement to hegemony: How is consent actually secured in ideology and not just at the level of the individual?¹⁸ Gramsci (1971) wanted to understand the social relations that create "not only a unison of economic and political aims, but also intellectual and moral unity" (p. 181). This calls for an analysis of power, but also for an investigation into how and why these modes of power become acceptable – in Gramscian terms, how they become "common sense" (Mann 2009). We can interpret the interaction among social groups and try to identify the relations of force through which power works, but that does not tell us how certain ideas come to be naturalized – how they reframe what is considered "reality." Governmentality thus provides us with ways of thinking about power that might answer how consent is secured within an individual (disciplinary), as well as the collective (biopolitical). Yet, the violence of political economic relations on bodies cannot be ignored in this framing.¹⁹ As thinking about biopower helps us come closer to realizing how "moral unity" is secured, so does coercion help us conceive of the ways governing projects "guide and encourage through threats" (Moore 2005, p. 10). What attention to both hegemony and governmentality does is shift our attention from power as a force that is held, to the

¹⁸ Though there is much literature on how Marxism and post-structural theories (i.e. postcolonialism) are incommensurable (Barnett 2005), some find this engagement productive (Larner 2000, Sparke 2006, Watts 2003). Ekers and Loftus (2008) argue for a shift away from studies of "neoliberalism" and toward the "practicalities and politics" of public service provision (p. 699).

¹⁹ Wainwright (2008) identifies an additional area in which hegemony might be limited, that is in explaining how prior violence is already inscribed in particular spaces. He asks: "What comprises hegemony if it is always already inscribed with a prior violence that did not obey the logic of hegemony?"

productive power of creating norms. Instead of making a choice between realist and relational forms of power, Ekers and Loftus (2008) suggest connecting the specific, subjectifying practices and techniques of power to broader questions around hegemony. Whether we see struggle as “resistance” to oppression or as a challenge to subjectivization is not simply a theoretical question, but dependent on investigating the concrete practices that produce power.

How to view governance

Seeing states as coherent entities that are separate from the interests of capitalism allows the development community to critique African governments for being weak or corrupt, and therefore unable to provide either the infrastructure or human capacity necessary to ensure food security. This is required to advocate for private investment in agricultural development, and to justify intervention in African countries, specifically through corporate partnerships. But, as Sidaway argues (2007), a postcolonial critique is that the supposed “weakness” of African states is not a result of a lack of authority or economic connectivity, but rather an excess. Connection with the West is what has led to weakness and corruption, both through resource exploitation and as an “other” to “positive, Western sovereignty” (Sidaway 2007). In other words, African sovereignty is “rendered intelligible and represented” in specific ways by the international community – weakness is a representation, a discourse of lack. Sidaway (2003) finds “sovereignscapes” to be a better concept than some “pure” form of western sovereignty based in shifting forms of authority (from god to king to territory to capital). Sovereignty here is a way of seeing (a scape), putting it closer to Foucauldian notions of governmentality than to centralized power. For Sidaway (2007), combatting this means looking at the meanings produced through power, not just asking “is there positive, western sovereignty, or not?” For example,

what is normal for a state? Corruption, in an African context, can only come from “normal” relations with the US – which include slavery, resource exploitation, and empire. Governance is not a deficit, it is what is made and claimed under the uneven landscape of global capitalism.

New geographies of sovereignty

As Roy (2015) notes in the introduction to *Territories of Poverty*, ideas about development are being intensely reinvented in the global South of the 21st century. New models of capital accumulation and accompanying social welfare experiments abound in places like China and India, while the US middle class struggles to find its footing after the global economic crisis of 2007-8. Possibilities for development seem “foreclosed” in many of the liberal democracies that gave us the Bretton Woods institutions, while middle-income countries are showing us multiple and varied options for growth and prosperity (Roy 2015, p. 11). According to Roy, these new geographies of global poverty provide the potential for thinking of a “new architecture of sovereignty” (2015, p. 12) – meaning, the potential to decenter the global North in the study of development and open up spaces for new strategic alliances and new modes of power.

But theorizing sovereignty as relational and non-territorially-based raises several questions for philanthropic development projects in Africa: Is Western intervention simply colonialism under another name? What about the poor? Where do the poor, who are excluded from many spaces of citizenship, go to demand political and economic rights? Who is promising development, why, and with what potential to deliver it? The extent to which the state, private sector, and civil society are related is a key question in this context, and is taken up in the literature on food sovereignty. To whom does one address rights’ claims when the point of food

sovereignty is to open up multiple sources of power, displacing the state as primary authority? Once the state has been displaced, what about the other sources of oppressive power (like corporations)?

As Patel (2009) notes, “to demand a space of food sovereignty is to demand specific arrangements to govern territory and space” (p. 668). Traditionally, “rights-talk” implies seeking these rights from the ultimate authority – the state – but what food sovereignty does is identify the multiple scales at which power and control exist within the food system, removing ultimate authority from a centralized power. Patel also notes, however, that while this displaces one sovereign, it “remains silent about the others” (Ibid). Following Benhabib, Patel (2009) argues that it is not only important to think about the structures that can guarantee rights, but also the daily practices and politics that make up food sovereignty. Wherever power works, it is important to identify the mechanisms through which control is maintained. This matters when considering who guarantees the property relationship for agricultural products (i.e. seeds). A central tenant of liberalism is that states enforce property rights. But if states and corporations are mutually constituted (Barkan 2013), then who guarantees communal rights, or the rights of those who are not corporations (Trauger 2017, p. 26-29)?

Wendy Wolford (2010) argues that analyzing agricultural development means “opening up” the concept of civil society to investigate discourses of who will represent the poor and how. For Wolford, neither social movements nor civil society groups are coherent. As Bernal and Grewal (2014) argue, they are not separate from state power, either (p. 8):

The NGO form produces and converts what is outside the state into a legible form within a governmentality that parallels official state power. In this way the NGO form, somewhat paradoxically, derives power from working with the biopolitical logics of the state. Moving across what is included and excluded by the state, also makes the NGO form key to neoliberal projects of privatization and state withdrawal.

This is particularly relevant in post-colonial Africa, as civil society itself (commonly thought to be a counterweight to state/corporate power) has roots in imperialism, what Mamdani (1996) calls “the society of the colons” (p. 19). Understanding the multiple subjectivities within hegemonic discourses like “civil society” is necessary, especially since competing discourses can be productive rather than harmful.

Looking forward, the project is to find examples of what autonomous development looks like in the colonial present in Kenya. Is it anti-imperialist development? Does that mean that cooperation among Southern states counts as autonomous? It is true that China’s presence in Africa feels very different than the US/European presence. China tends to fund projects focused on building infrastructure with less focus on influencing policy (Mohan and Power 2009). But even this kind of connection does not always translate to benefits for rural peasants. The question remains: what *should* development look like? We cannot *not* desire it, yet we know it is not separate from the uneven processes of capitalism (Wainwright 2008, following Spivak). The location of development is less clear under conditions of “partnership” as well. Development is no longer an external project, one driven by cooperation between nation states. Yet neither is it internal, something possible to achieve *as* a nation-state. As individual bodies are enrolled in development narratives, development has been characterized as more biopolitical than geopolitical (Patel 2013). These competing identifications of governance work with and against each other within development projects.

Even so, Carmody (2013) insists that shifting geopolitical power does not preclude development via a strong state, and asserts that economic connectivity is “surprisingly autonomous” from Western control in the BRICS (p. 11).²⁰ Instead of core/periphery models, he

²⁰ Quoting Barma et al. (2007, p. 23-4). BRICS stands for Brazil, Russia, India, China, and South Africa.

recognizes “South-South” alliances built on anti-colonial foundations, both histories of exploitation and material flows (Ibid). This “South space” does not challenge the integrity of territorial sovereignty, but suggests that it might look different in a new world order based on less exploitative and more equal social relations (Ibid). Rather than conceive of sovereignty as partial and fracturing, Carmody (2013) argues for a bolstering of “stateness” as a productive strategy for addressing economic imperialism (p. 15). According to Carmody, the desire for recognition in the international system that is shared by historically oppressed nations can lead to South-South cooperation that is not reliant on Western technology or capital. Ananya Roy (2016) writes similarly of the possibility in the global South to create new spaces of sovereignty that exist outside of the Eurocentric “transition to capitalism” narrative. Carmody (2009, 2013) points out that the global North’s resource sovereignty depends on the South. This is a source of power that could be mobilized to produce a “World without the West” through increased connection among developing countries.

While this sounds like a useful regional imaginary, it is not without problems. Within the global South, there are uneven resource geographies and governance structures. Elite rule, ethnic tensions, and hierarchies around race, class, and gender are still reinforced via “global governance” and its development implications (Carmody 2009). This is why hegemonic development narratives put forth “the market” as a solution to inefficient public service provision or non-responsive states. Some believe that the market can deliver “pro-poor” development strategies and projects (Ferguson 2010, Peck and Tickell 2002, cited in Roy 2015). And that the shift in the location of global development toward middle and low-income countries has progressive potential. Roy (2015) and Ferguson (2010) argue that these new modes of power are not always produced in opposition to neoliberal techniques of poverty governance. Rather than

thinking about these shifts in governance as moving from market to state, or returning to any kind of previous social policy, Roy emphasizes the need to focus on the uneven geographies created by various development activities. This framework suggests that pro-poor projects are possible within neoliberal rationalities.

Nancy Fraser (2010) identifies a “third pole”²¹ of emancipatory struggles that details the oppression that certain groups experience as a result of social protections previously organized by governments. While it is critical to continue to illustrate the violence of market-based mechanisms and state sovereignty, she argues for attention to the diverse struggles within these practices of domination, like those based on racial and sexual justice. The point is to address “*how and where* resistance to marketization is *redirected*” especially via philanthropic narratives of self-help (Mitchell and Sparke 2016, p. 5). In the WEMA context, this means asking what happens when the right to food or other rights demanded by food sovereigntists are directed away from the government and toward venture philanthropists. Emancipatory concerns with corporate control, patents, and private property are undermined in the shift toward corporate partnerships whose intellectual property rights blocks access to these technologies in the first place (Ibid).

Grassroots organizing is typically seen as the antidote to the problems with the state and the market, but where do these organizations go to demand rights? If, as geographies of development shift, the Gates Foundation increasingly plays a role in determining how both rural and urban populations in Kenya are governed, will it also assume the risks previously associated with states? The Gates Foundation is not granting funds to social movements, but rather to their

²¹ Furthering Polanyi’s (1944) account of the “double movement” between marketization and social protection

structures they oppose. And it is placing the risk back on the smallholder farmer while at the same time eroding state power.

Conclusion

This dissertation explores development as economic connectivity. With political independence achieved, but “economic shackles”²² still attached, African states have long been thinking about the relationship between national sovereignty and economic development. Immediately post-independence, Pan-Africanist thought included calls for both connection and disconnection (to/from the West) as strategies to address economic development concerns.²³ But now, after 50 years of “development” and its critiques, and various patterns of connectivity, are we in a better or different position to evaluate the promises and perils of what are now framed as partnerships? This is important to ask because the narrative of connectivity has survived, and thrived, despite critiques of both “Big D” and “little d” development (Hart 2001). It is particularly important to evaluate the social outcomes of philanthropic partnerships as they become a model for both agricultural development in Africa and economic growth for corporations.

²² See: Ukelina, B.U. (2017). *The second colonial occupation: Development planning, agriculture, and the legacies of British rule in Nigeria*, and Guest, R. (2010). *The shackled continent: Power, corruption, and Africa lives*.

²³ Fanon (1963) thought regional economic cooperation was the solution. And, revolutionaries like Jomo Kenyatta, after fighting for political independence, came to advocate close economic ties with imperial powers like the UK and US. Samir Amin, alternatively, has argued that the only possible way for Africa to seek self-determination is to disconnect in arenas of “trade, finance, capital, intellectual property, transfer of technology, and so on” (Grovoqui 1996, p. 206). Noting that the West has traditionally taken advantage of Africa when it was most vulnerable, Amin and others have suggested that Africa pursue an independent course of action whenever possible. These arguments are based in Pan-Africanist notions of self-reliance, and have increasingly greater appeal as the African experience continues to validate their theoretical premise.

But what can philanthropic partnerships accomplish in an uneven international order?

According to Mamdani (1996), without democratization, there is no autonomous development possible within African states, only continued privatization under globalization (p. 288):

In the absence of democratization, development became a top-down agenda enforced on the peasantry. Without thoroughgoing democratization, there could be no development of a home market. This latter failure opened wide what was a crevice at independence. With every downturn in the international economy, the crevice turned into an opportunity for an externally defined structural adjustment that combined a narrowly defined program of privatization with a broadly defined program of globalization. The result was both an internal privatization that recalled the racial imbalance that was civil society in the colonial period and an externally managed capital inflow that towed alongside a phalanx of expatriates – according to UN estimates, more now than in the colonial period!

Mamdani's argument exposes the complicated geographies of economic interconnection. This is taken up in "postcolonial" economic geography. In a piece on "disarticulations," Bair and Werner (2011) challenge what they see as a "general and systematic bias" in the global commodity chain literature: the theoretical and empirical emphasis on incorporation (p. 989). Focusing instead on the "layered histories and uneven geographies of capitalist expansion, disinvestment, and devaluation," they argue for analyses of both inclusion and exclusion (Ibid). The concept of disarticulation suggests an alternative relationship to hegemonic frameworks in economic geography that are based the concept of incorporation. This alternative relationship allows Werner (2012) to argue for spaces of "autonomous development" as essential to de-centering capitalist accumulation (p. 133). Raj Patel (2013) argues the same in the context of the "long Green Revolution," suggesting that alternatives to agricultural systems based on capital accumulation must be based on peasant autonomy from the forces of state, private sector, and civil society (p. 50).

One problem in thinking through this question is that in the Western context, autonomy is associated with an affirmation of the self, yet decolonization imposed substantial external requirements on "African self-determination" that resulted in neocolonial states with no ability to

change international relations (Grovoqui 1996, p. 195).²⁴ In other words, theory was not translated into practice. The Western notion of self-determination fell victim to the Western desire to secure hegemony through other juridical concepts, namely constitutionality and rights under Western law. This means that whatever autonomous space is theorized, it must also be put into practice – a difficult task under hegemonic conditions in the international realm. In the context of uneven development, this means that autonomous spaces are extremely susceptible to co-optation.²⁵

This suggests a challenge, but also a possibility. Following Pan-Africanist thought, thinking about autonomy as collectively determined, and based on alternative political instruments that put inequality at the forefront of rights talk, could mobilize a different form of self-determination. It would mean that rights were secured not under an uneven international structure, but in spite of it. In terms of increasing foreign investment in Africa, this could mean a focus on political instruments that guaranteed collective or communal rights to land, rather than reinscribing the power of private property as a universal law. This, of course, depends on how and under what conditions global investors and philanthropic capitalists partner with African countries. This dissertation looks at the WEMA partnership to explore those possibilities.

²⁴ Grovoqui (1996) also notes here that hegemony is not imposed *either* via force *or* persuasion. “Where there is no tradition to sustain the outside ideology,” force must come first (p. 247)

²⁵ See: Mercer (2003) on how “technologies of partnership” empower and normalize market-led development.

CHAPTER 3

METHODS

Research Fellow: I don't think the government really wants to keep the ban in place. That ban was actually a fraud, and the government is finding itself in a fix.

Me: Why can't they reverse it?

They cannot reverse it because it does not even exist.

It was just a Cabinet decision?

It was not a Cabinet decision either. It appears to have been fraudulently said to be a Cabinet decision.

Then it should be very easy to get it reversed.

We can't use the word "reversed" because it doesn't exist.

Then no one should care anyway if it doesn't exist.

You see what happens is this, I don't want to use the word ban because a ban must follow laid down government procedures and regulations to be effected. This wasn't that. So, what we have is not a ban, what we have is an "executive prohibitory order" that stops importation and consumption of GM foods.

So, the "fake" ban is about both importation and consumption?

Yes. Which means that even the locally produced [crops] cannot be consumed.

I think some people are under a different impression.

No, no, no. I read the whole thing.

You read what whole thing?

The ban.

You said it was fake.

Yeah.

What did you read then?

It was replicated in the newspaper by the NBA.

So, they made it legal by putting it in the newspaper?

No, a newspaper does not make it legal.

I'm sorry, they made it valid in some way [by publishing it]?

No, no, they only reminded the public...they put a notice in the newspapers. Not the *Gazette*. You know it has to be *Gazetted* to be legal. And they know that they avoided it. So, they went to the newspaper to say that you are not allowed to have GM food.

So, the ban, whether it is real or not, it has real effects.

What we call the ban, I think, to me is a temporary issue.

- Interview with Senior Research Fellow at the University of Nairobi (7.28.15)

Analyzing narratives of social/environmental governance

The issue of the GMO ban in Kenya is a contentious one. There are those who fight to retain precautionary measures regarding transgenic technology and those who want nothing more than to see the ban disappear. There are even those, like the researcher quoted above, who say it does not legally exist. As the above text illustrates, it is very difficult to understand the genesis of the ban, much less how it actually functions in Kenyan political and economic life, simply by analyzing media or interview text. This, in turn, makes content analysis inadequate for addressing larger questions of economic and political connectivity surrounding technologies of governance like the ban. Regardless of how the ban came to be (or not to be), it both constrains physical production and circulation of GM crops and performs work within discourses of agricultural development and productivity. To understand the connection between narratives of GM crops in Kenya and those that circulate in the development industry, as well as how these narratives do the work of governance through agricultural development, it is necessary to understand how they are constructed and mobilized. What worldviews (the discursive/material structures that shape ideas) allow for these narratives to exist? And what can we interpret about poverty governance from these narratives?

For example, competing narratives of the ban and its effects on food security in Kenya are linked to a broader global discussion of geopolitics that has become polarized into “pro” and “anti” GMO groups. A common argument is that the US is “pro-GMO” and that Europe is “anti-GMO,” and that connection with either interest leads to a particular policy framework. Precautionary measures are associated with links to European NGOs while permissive regulatory and trade networks are typically modeled after US policy. What is conveyed through these narratives is that Kenya is dependent on outside intervention to structure its

environmental/agricultural governance, not having the (autonomous) capability to decide what role GMOs should play in their own society. This is a colonial narrative. The problems of poverty and food insecurity in this context are defined as technical, requiring intervention in both political and scientific sectors of the Kenyan government. This way of seeing poverty does not challenge problems of the colonial present, rather it helps reproduce them. Whether the argument is for or against GM crops, it is seen to originate in wealthier and more technologically advanced countries, trickling out to African nations through “best business practices” or scientific “innovation.”

This dissertation considers these types of narratives within a broader geographical conceptualization of sovereignty. This means asking what particular narratives can tell us about how crop biotechnology projects function as governance. Who controls resources and decision-making in these projects? How do they work to reinforce or contest state/corporate power? Is the shifting landscape of global development making way for new geographies of sovereignty which decenter the global North? In order to answer these questions in the specific context of the WEMA partnership, this dissertation relies primarily on the narrative analysis of partner interviews to illustrate how people think and form arguments about GM crops in Kenya, linking those arguments to broader geographies of poverty governance (what some people call development). Additionally, in thinking through the subjectivities created by and through the WEMA partnership, it focuses on the discursive agency, or practices of self, that show how discourses work to shape subject identity. Most simply, this “method” is the process of reading texts politically, analyzing discourse not for similarity or comparison, but in order to understand how power functions in philanthropic partnerships, activated through and in ideas, bodies, and GM crops.

Qualitative methodology

The argument for using GM crops as a development tool focuses on the possibilities of the technology to increase yields, leading to increased income for smallholder farmers. This kind of argument separates narratives of social and technological innovation, giving priority to the latter. This is important because it revives old, troublesome narratives (the Green Revolution as a solution to global hunger, or aid conditionalities as essential for good governance) and pairs them with updated partnership narratives to justify the incorporation of smallholder farmers into capitalist agriculture. What this research investigates are how these narratives are reproduced (restructured, resuscitated, and reused) to maintain dominant forms of poverty governance. To do this, I need to know what people say and what narratives they latch onto to justify humanitarianism, even in the face of reproducing unevenness. I need to show how poverty narratives reproduce poverty.

Qualitative research methods, including conducting interviews, participating in and observing the daily practices of GM crop development in Kenya, and following media and donor narratives (through archived articles) allows for triangulation of data to help answer the above questions. Each method allows access to different aspects of a narrative:

1. Media/news articles: Provides popular discourses of development and technology transfer as well as their counter arguments from food sovereignty groups (opposition to dominant narrative).
2. Participant observation: Allows narratives to arise that I did not specifically seek out in interviews. Allows me to see broader “landscape” of agricultural development.

3. Interviews: Allows me to hear emotion, background, and people's stories. And, more importantly, it allows me to interact with participants, pushing back on some narratives and co-producing knowledge (rather than pure extraction).

Qualitative methodologies allow me to identify where these narratives come from and what allows them to be said. I can look at what is/not said to analyze the competing ways these narratives are used. The goal here is not to try to find some objective truth, rather to try to understand how power works in various ways to produce discourse (Coykendall 2015).

Qualitative methods also make it possible to look at multiple ways of knowing and a variety of ways in which power functions – coercive economic power, disciplinary biopower, sovereign geopower, and embodied identity formation.

I selected the WEMA project as an emblematic case study for analyzing the claim that agricultural biotechnology partnerships provide promise for poor smallholder farmers in Africa. The WEMA project is the largest maize pipeline in Africa, and is funded by the largest philanthropy in the world, the Gates Foundation. This project is an attempt to understand a *relationship* – the relationship between an uneven set of partners, each of whom mobilizes narratives of humanitarianism and food security in order to promote GM crops as a solution to hunger and poverty. It is also a partial attempt to understand competing narratives – those which enter the debate as targets of opposition, often mobilized to delineate boundaries among social groups.

In the broadest sense, this project began through engagement with the literature on global ethnography (Burawoy et al. 2000, Lapegna 2009, 2014). The idea of a global ethnography is to “reveal how global processes are collectively and politically constructed, demonstrating the variety of ways in which globalization is grounded in the local” (Gille & Ó Riain 2002).

Whereas traditional ethnography locates the researcher in the particular space being analyzed, a global ethnography acknowledges the shifting terrain and constructed nature of space and calls for the study of “place-making projects” (Gille & Ó Riain 2002). The location of study here is what Burawoy et al. (2000) call a “field” – a relation between sites – as opposed to the site itself. Though the WEMA partnership is headquartered in Nairobi, it is constructed through relationships in multiple locations (Missouri, South Africa, Kenya, Washington DC, Uganda, Tanzania, Mozambique, etc.) and in diverse forms (websites, research stations, meeting rooms, maize fields, and hotel lobbies to name a few). Investigating these relationships means asking how and why poverty is governed as a problem, in this case, through the specific form of poverty governance known as philanthrocapitalism.

While philanthropic work in the agricultural development community is often seen as the transfer of technology created via a universal, Western science to specific places in the global South, I seek to move beyond the global/local binary by prioritizing the relational nature of the WEMA partnership. This means blurring the concepts of the particular and the generalizable as well as paying attention to both connection and “disarticulation” (Bair and Werner 2011) in economic and political relationships. In doing so, I investigate how boundaries, particularly in terms of class and identity, are produced through the connections enabled by GM crop development. The site here is not simply the “field” (as in: the relationship between the Kenyan government and a US-based philanthropy), but a process which takes place within bodies and through the circulation of ideas. This method pays particular attention to how colonial relationships and spaces are reproduced within these bodies as well as within political and economic spaces in Kenya.

The literature on “neoliberal natures” (Heynen et al. 2007, Mansfield 2007, McCarthy 2004, McCarthy and Prudham 2004) suggests that it is impossible to separate processes of capitalism from the regulation of life. It also suggests that the relationship between the state and capital is not the only place to explore what governance might look like. Opening up the sites of *government* (Foucault 2004) to laboratories, fields, universities, conference rooms, and media outlets, yet retaining a focus on the practice of politics within these sites can help us identify the mechanisms by which GMOs govern and are governed in the Kenyan context as well as how knowledge is produced, applied, and circulated.

Data Collection

1. Field site

I focused data collection in Nairobi, Kenya, as the location of the WEMA project headquarters. Though the “field” of the WEMA project is global, Nairobi provided access to partners in the following institutions: the African Agricultural Technology Foundation (AATF), Monsanto’s East Africa headquarters, KALRO’s Biotechnology Center, CIMMYT, and researchers at the University of Nairobi and Kenyatta University. A glaring omission were WEMA partners from the Gates Foundation, who never responded to requests for interviews (in Kenya or St. Louis, MO).

Additionally, Kenya provides a salient backdrop for investigating forms of global environmental governance, as evidenced by the tension between the GMO ban and the continued development of GM crops in country. There has been vigorous debate over the legal, moral, and practical implications of banning GMOs in the media,¹ and scientists and policymakers have

¹ The two most influential newspapers in Kenya, *The Standard* and *The Daily Nation*, have covered the GMO debate extensively.

been in conversation since at least 1980 (when the Science and Technology Act was first passed) about the role that GMOs should play in Kenyan economic development. The main justification for GMOs in Kenya by their promoters is to “increase food security” and “address climate change” by focusing on problems of crop yields (Lynas 2013). Not only has this claim been challenged in the scientific literature (Sen 1981, 1999; IAASTD 2009), but the uncertain outcomes related to GMOs are also specifically guarded against in the Cartagena Protocol on Biosafety, to which Kenya is a signatory. The precautionary principle, as the fundamental theoretical principle guiding both the Convention on Biological Diversity (CBD) and the Protocol, makes it clear that states must have the option to protect against future risk in the absence of scientific certainty regarding GMOs. The Kenyan National Biosafety Act of 2009, however, completely excluded the language of precaution.

The precautionary principle was vigorously debated during treaty negotiations, including whether and how it should be incorporated into the Protocol, and Kenya was part of the group of developing states (named “the Like-Minded Group”) that strongly supported its inclusion. The Like-Minded Group additionally called for a comprehensive scope to the Protocol covering all kinds of GMOs, including processed food and feed, a strict liability clause for redress, and the inclusion of socio-economic considerations (Cosbey and Burgiel 2000). Kenya also hosted the signing of both the CBD in 1992 and the Protocol in 2000, and was the first nation to ratify the treaty. This means that in the years 2000-2009 there was a marked change in state discourse related to GMOs. What also changed in that time was an increase in funding for, and new corporate partnerships with, “innovative” plant breeding projects (i.e. IRMA and WEMA).

2. *Methods*

I conducted fieldwork in Nairobi, Kenya over the course of two summers (2013 and 2015) for a total of 6 months. This included participating in 22 semi-structured interviews with WEMA project partners, attending biotechnology conferences and meetings (which resulted in an additional 28 presentations), and making field visits to partner headquarters, university biotech facilities, and crop testing sites.² During the summer of 2014, I collected data in Washington DC, conducting 4 semi-structured interviews and attending the AIARD (Association for International Agriculture and Rural Development) conference as a Future Leader. This allowed me to participate in activities at the USDA, FAO, and World Bank facilities in DC. Interviews were recorded and transcribed (with the exception of 3 interviewees who asked not to be recorded), and extensive notes were taken during the remaining interviews, field visits, and meetings. From 2012 to the present, I also gathered archival data on narratives of GM crops in Africa via WEMA partner websites, Kenyan media outlets, scientific research publications, and social media (Twitter and Facebook).

A. *Interviews*

Every person I interviewed had an advanced degree in a field related to crop biotechnology. Though they were primarily research scientists (in fields such as molecular biology, genetics, plant breeding, and biochemistry), others had degrees in communications and environmental management (some had both). In total, 13 had PhDs and 10 had Masters Degrees. As an interviewer, I functioned primarily as a recipient of knowledge on the science and policy

² Field visits (2015): Kenyan Agriculture and Livestock Research Organization (KALRO) biotechnology headquarters, CIMMYT headquarters, MLN screening facility in Naivasha, University of Nairobi, Kenyatta University, USAID at the US Embassy, Open Forum on Agricultural Biotechnology (OFAB) meeting, African Agricultural Technology (AATF) headquarters, ILRI offices (Program for Biosafety Systems)

of GM crops in Kenya. However, I made explicit attempts to push back when participants made sweeping claims about the promises of poverty alleviation inherent in improved seed technology as well as when claims of “real science” were invoked. This was not an attempt to control the narrative, but rather to be honest about my positionality. In general, I found that identifying myself as a US researcher led participants to believe that I was interested in facilitating the introduction of biosafety policy (as is USAID and USDA’s goal). I felt obligated to dispel my “insider” status at the same time I was exploring it (Dowling 2010, p. 36).

In discussing globalization as an object of critical analysis, Peck and Theodore (2012) note several limitations to interviewing elites, most notably the difficulty in getting through the staged, exaggerated, or scripted rhetoric to the “hidden transcripts” (p. 26). This was certainly a concern during interviews, particularly with those whose job was to promote the WEMA project and contest the ban. Peck and Theodore (2012) contend, however, that interviews, which are dynamic and not simply extractive, provide the opportunity to examine conflicting accounts amongst a range of knowing actors through the process of co-production (Jasanoff 2004). The interviews I conducted were designed to collect information on the structures within which knowledge is produced as well as how it is incorporated into larger discourses (See Appendix D for a list of interview questions).

Along with the individual questions listed in Appendix D, I asked each partner to address three main structural questions:

1. What does your institution put into and get out of the WEMA project?
2. Why does Kenya need GM crops?
3. What does sovereignty look like in African food systems? (* I sometimes replaced the work sovereignty with colonialism)

These interviews are listed by institution (and title where available) in Appendix E, as per the Institutional Review Board's instructions in its approval of this project. While questions related to the individual were focused on illuminating discourses of identity and the self, broader questions about the structure of the WEMA project were used to identify discourses of power.

B. Participant observation

Crang (1997) argues for observation as a way of “taking part in the world, not just representing it” (p. 360). This means that the process of observation is active, a choice of what and how to see (Kearns 2010). I used participant observation to fulfill two purposes, to *complement* the formal data collection of interviews, adding a descriptive element to participant narratives, and to *contextualize* the situation I had entered as an “insider” and “outsider” (Dowling 2010, p. 36).³

As mentioned above, I attempted to be critically reflexive of both myself and the nature of my research during the interview process. Engaging in participant observation helped in this goal. Showing up at conferences, workshops, and open forums where crop biotechnology and biosafety legislation were promoted allowed me to see a community of people engaged in what they described as both a scientific and humanitarian endeavor (see: Appendix F). Though the narratives were similar to interviews, the atmosphere was more spontaneous and collaborative, and highlighted diverse ways in which knowledge around GM crops was produced and circulated. I also was less visible in these contexts (not the only white face in the room, and not the center of attention), which allowed me to view performances from a more remote position.

³ What I mean by this is that I spoke similar languages of science and development with participants, marking me an insider in certain aspects, but I was also clearly American, female, and believing myself to be white (Coates 2015).

Kearns (2010) suggests that “conscious participation...increases the potential for more ‘natural’ interactions and responses to occur (p. 246). A specific example of this occurred when I accompanied two CIMMYT scientists to a Gates-funded field site for testing maize designed to withstand MLN (Maize Lethal Necrosis). These fields were not related to the WEMA project, but a participant from the day before had suggested I come along to see what they do. I spent most of the day in the car with two CIMMYT research scientists listening to them complain about public agricultural funding in Kenya, and talking to field technicians about the mundane practices of performing field trials. We also had a pizza lunch overlooking Lake Naivasha. This experience not only allowed for more “natural” interactions with interview participants, but it helped me broaden my narrow conceptualization of participants as “scientists,” allowing me to view their decisions as human, and not technical.

C. Archival Research

Though the archives that I explored only go back to the early 1990s, tracing the recent history of the development of GM crops in Kenya helps situate the WEMA project in a broader spatial and temporal context. I used daily newspapers as the primary source of data on the evolving issue of the ban (the *Daily Nation* and *The Standard*), collecting articles from 2012-2017 via a Google search for “Kenya GMO.” Over the course of five years this resulted in over 30 articles relevant to my narrative analysis. I also heavily relied on the Gates Foundation website to gather data on the types and amounts of agricultural development grants (<https://www.gatesfoundation.org/How-We-Work/Quick-Links/Grants-Database>) as well as the goals and strategy for implementation of these grants (<https://www.gatesfoundation.org/What-We-Do>).

Analysis

Interviews were recorded, with the exception of the CIMMYT interviewees. Field notes were used in this situation as well as during participant observation to capture key phrases and ideas. Interviews and field notes were transcribed and used to produce texts, which (added to the archival texts) were then coded for relevant themes, and analyzed with secondary sources using a combination of critical discourse analysis and narrative analysis. Analysis began alongside data collection, functioning as a feedback into the daily practice of doing research. Reading these texts through the lens of uneven development and paying critical attention to differing conceptualizations of sovereignty allowed me to generate narratives to be analyzed.

1. Narrative analysis

The GM debate is polarized, meaning there is little attempt to go beyond arguments that fit easily into the “for” or “against” camps. Narrative analysis is an attempt to get out of binary modes of thinking and framing a problem and look at the multiple and shifting influences on discourse. While individual narratives cannot tell us what is “actually happening” (which does not exist), they can tell us something about how people represent and understand these processes (Claggett 2015). Narrative analysis has roots in feminist research, emerging as a way of challenging dominant, dehumanizing research practices (Riessman 2000). This is a form of analysis based on possibility, not just critique. It is also premised in the fluidity of subjectivities surrounding narratives. Positionality can change within the response to an interview question, much less over longer periods of time. Narrative analysis is used to tell *how* subjects tell stories, meaning it is open to “multiple layers” of interpretation (Wiles et al. 2005). It is also dependent on social context, which is why interpretation requires connection to broader historical, political,

and economic narratives. Though the generation and interpretation of narratives is a highly individualized and contextual exercise, it allows for a more nuanced understanding of how WEMA partners view the development of crop biotechnology and their own role in shaping economic landscapes.

I generated the following primary narratives for each chapter (using thematic codes, some of which are overlapping):

Chapter 1: *appropriation* (i.e. patents, efficiency, labor savings, precision, partnership, ownership, corporate control, technology transfer, profit)

Chapter 2: *subjectivization* (i.e. the poor, humanitarian, care, science, class, incentives, smallholder farmers, death, identity, choice, brain drain)

Chapter 3: *privatization* (i.e. democracy and governance, conditionality, best practices, security, grants, public funding, competition)

2. *Critical discourse analysis*

Critical discourse analysis (CDA) involves explaining how statements accepted as “true” are always historically variable, subject to the uneven social relationships of technology and power (Waitt 2010). The benefit of investigating how a set of ideas are “produced, circulated, and maintained,” is that it can help illuminate the process by which certain ideas become dominant and others are silenced (Waitt 2010). Discourses are understood to be more than language; they include “actions, interactions, ways of thinking, believing, valuing, and using various symbols, tools, and objects to enact a particular sort of socially recognizable identity” (Gee 2011, p. 29). I paid attention to how interviewees and archival documents describe their organization’s work; how they engage concepts of food security (“starving” or “yield”),

geopolitics (“national interests” or “harmonization”), biopolitics (“risk” or “health”), hegemony (“strategy” or “alliances”) or other forms of government/political action (“the ban”); and how they situate biotechnology within their local contexts. These concepts were used for interpreting how those discourses reveal or conceal strategies for the movement or suppression of certain forms of knowledge. Following Gee (2011), validity in critical discourse analysis is not the ability to reflect reality, but the “search for patterns and links within discourses in order to form hypotheses about how meaning is constructed and organized” (p. 122). For example, the discourse of “precision in science” can be seen an attempt to “manage uncertainty” in the world (Gee, p. 49). Likewise, a discourse of “rights” suggests the problematic of “liberal democracy.” The end goal of this analytic method is to link discourse to performance.

Limitations to this project

The primary motivation for studying the WEMA project in Kenya was the chance to study myself, or who I might become. I am a former Peace Corps Volunteer who lived in West Africa for two years to “do” development in a poor, rural farming community. When I talk to researchers working on the development of GM crops, I am talking to people who, like me, have spent years trying to understand poverty and provide potential solutions. I am talking to people who, like me, have worldviews steeped in Western practices of science and business. I study this partnership because I could have been the project manager at the Gates Foundation who approved the grant, and I want to know what the outcomes of this kind of work are.

I did not focus on data regarding yield increases/decreases or all of the amazing *potential* benefits that GM crops are supposed to represent for the poor. This is not just because I want to know what is actually happening rather than what a corporation tells me is possible, but also

because this kind of data is considered proprietary – meaning, unavailable to the public. This is obviously a limitation to measuring the potential of biotech maize, but one created by Monsanto. My interest lies in what actually happens during and after a project is funded, and how that is measured and evaluated. The justification for these projects – ending poverty – is not typically something that can be measured within the lifetime of a venture philanthropy grant. Continuing to intervene in the absence of these measurements, or in the face of continued reproduction of poverty is a poor scientific strategy if poverty reduction is indeed the goal.

This project began as a way to investigate the ban on GMOs in Kenya as a policy issue. This was most likely due to my training in International Affairs. I asked questions like: What are the global implications of African countries banning GMOs and how will this affect trade and food security? After switching from International Policy to the ICON PhD program, I felt it was necessary to focus on both the ecological and social components of GM crops as “boundary objects.” This came from semester one readings in Science and Technology Studies (Jasanoff 2004, 2005; Goldman et al. 2011). What could looking at differing interpretative frameworks tell us about the polarization of a scientific debate? Or the production of agricultural knowledge around GM crops? What could they tell us about hunger and the environment? Do GM crops yield more while using less land? Can they help smallholder farmers? This seemed, and continues to seem, useful – using biophysical and social data to make claims about crop production. But it also seems limited in some way. My subsequent research and investigation steered me away from this manner of thinking – how to “integrate” social and biological science – and toward what was missing in the dominant framing of the debate. What is missing is a broader concept of science, situated in specific contexts and attendant to how science and policy function not only in a decision-making arena, but within ourselves. Who do we become in

“development” or “conservation” projects? Why does this matter? I detail this shift because while it occupies a small paragraph here, it occupied 5 years of struggle in my mind. Integrative research means different things in different spaces, but to me it means searching for what is dominated, obscured, or left out.

This work is not revolutionary. Many of the arguments here are well known in the development literature. But without the integration of “the political” and “the scientific” in environmental governance, the outcomes of development projects will continue to be the same – uneven benefits that reproduce inequality. Thus, my definition of *integrative* centers on maintaining the connection between material and discursive forms of power, and suggesting that it helps to think through economy, culture, politics, and discourse as part of the same problem – in this case, “poverty.”

Conclusion

This is my own story, my own interpretation of the narratives I co-produced, collected, and analyzed. But this is also an attempt to put different actors’ agency into context. Instead of telling the same story about how corporations destroy the environment and the little guy, I show how the positions of a variety of partners are constrained by capitalism. Subject formation under capitalism does benefit groups unevenly, but it also creates ruptures and hesitations in hegemonic frameworks like development. I engage in this research not to enact social change from grassroots organizations or laborers or farmers, but to explain how precarity is produced at multiple sites by those of us who consider ourselves humanitarian. This is a study of humanitarians, not of those who they seek to help. And it seeks to put humanitarian actors in the middle of poverty production, not romanticize them as a solution from above.

CHAPTER 4

THE LIMITS TO CROP BIOTECHNOLOGY

The world has recognized the promise of Africa, and Microsoft wants to invest in that promise...At Microsoft, we view the African continent as a game-changer in the global economy. We believe deeply in the potential of technology to change Africa, but we believe equally in the potential of Africa to change technology for the world.

- *Microsoft 4Afrika Initiative*

We believe that solutions to Africa's greatest challenges can come from within Africa. Our role is to support African partners whose bold ideas and creative approaches have the potential to save lives, improve health, and help farming families all across the continent. We devote half of the foundation's resources to projects in Africa and to helping African countries learn from one another.

- *Bill and Melinda Gates Foundation*

Bill Gates no longer runs the day-to-day operations of Microsoft, but both that company and the Bill and Melinda Gates Foundation have taken a special interest in Africa as a site of innovation and global economic growth. The *Microsoft 4Afrika* initiative is aimed at increasing access to Microsoft technologies and products across the continent as a strategy for economic development, and the Gates Foundation currently commits over half of its resources to Africa in the hopes that innovation will “help the world’s poorest people lift themselves out of hunger and poverty.”¹ The narrative of Africa as a global catalyst is relatively surprising considering the historical tendency to frame the entire continent as a space of poverty, war, and famine. Less surprising is the idea that the “Dark Continent” is continually in need of transformation and improvement. But is innovative agriculture the solution to hunger and poverty in Africa?

¹ <http://www.gatesfoundation.org/What-We-Do>

In the shifting narrative of Africa's relationship to the rest of the world, calls for development aid have morphed into discourses of state and local "partnership" with private corporations. This is particularly true of philanthropic capital coming from the US. Yet there is little to suggest that outcomes of these partnerships will be substantially different from donor-based aid projects in terms of who is in control and who benefits. This chapter investigates the transgenic component of the WEMA project as one of the most influential agricultural partnerships in Africa focused on technological innovation. It analyzes the relationship between the Bill and Melinda Gates Foundation, Monsanto, Kenyan agricultural scientists, and a Kenyan-based NGO (the AATF) in order to illustrate what partnerships focused on improved seeds look like in present day Kenya (see: Appendix A for a diagram of the partnership structure.)

WEMA is the largest maize-breeding pipeline in Africa, situated across five countries and enrolling a host of partners across the public and private domains. The goal of WEMA is to reduce hunger and poverty through seed improvement, using both conventional and transgenic methods. Though conventional varieties are already available to the public, the release of genetically modified (GM) seeds has proven to be a political nightmare for the WEMA project in Kenya, where GMOs are banned. The persistence of neo-Malthusian humanitarian narratives that argue for access to transgenic technologies as a solution to African rural hunger and poverty is striking in this context, especially considering the lack of evidence of success (Stone 2005).² Humanitarianism, however, does not need to be successful to justify its existence. As Essex (2013) notes, humanitarian discourses can absorb critique and even emerge strengthened from

² Most comprehensive studies conclude that although there is some evidence that "on average" GM crop adoption in Africa has been profitable to users, the variability across agro-climates, farming methods, and cultivars makes it hard to generalize results. Additionally, there is little research (and thus little reason to claim success in) outcomes on broader social impacts, like poverty alleviation. See IFPRI's "Genetically Modified Crops in Africa" (2013): <https://www.ifpri.org/publication/genetically-modified-crops-africa>

the process. The Gates Foundation, for example, uses narratives of hunger to promote crop biotechnology in Africa even if there is no measured link between GM crops and poverty reduction (Stone and Glover 2011, see also: Introduction).

As the Gates Foundation and its implementing partners, including corporations like Monsanto, continue to gain control over African seed networks and crop research trajectories, critics have argued that this process is a continuation of historic patterns of colonialism, specifically in terms of exploitation and appropriation (Thompson 2014; African Center for Biodiversity 2012, 2013). Kenyan plant breeders have also expressed reservations about the ability of crop biotechnology to help hungry populations.³ Given these critiques, which are supported by decades of critical development studies on the *anti-politics* of technical intervention (Ferguson 1994, Gupta 1998, Mitchell 2002, Li 2007) how does technological innovation in the agricultural development industry continue to dominate humanitarian narratives of partnership? How is this work seen as “help” at the same time that it produces economic inequality? This chapter addresses these questions by providing an empirical contribution to the literature on philanthrocapitalism, analyzing the processes of enclosure (White et al. 2012) at work in the WEMA project.

GM crops are useful indicators of the shifting nature of property regimes in Africa – from communal to private – and they additionally show us how uneven power relations within partnerships can shape who controls natural resources and who benefits from their use. The use of land and labor in Kenya to bolster global biotech markets does not address poverty, but rather continues the colonial tradition of accumulation in “other” (formerly called “core”) spaces outside of Africa. This chapter details the processes by which the Gates Foundation subsidizes

³ Interview with plant breeder/research scientist at University of Nairobi, July 2013

corporate interests in what used to be public systems of agricultural research and development, successfully integrating corporations into humanitarian attempts at public service provision. Following an investigation of the processes of appropriation and enclosure at work in this particular corporate/philanthropic project, I explore each partner's relationship to humanitarian narratives of hunger in order to show that the process of "being a partner" is much more than a technical intervention in plant breeding. The clearest result is not poverty reduction, but poverty governance in the service of addressing corporate profit crises.

Biotechnology transfer in context

The concept of "technology transfer" has a long history in the agricultural development community, having been used for decades to justify intervention into farming communities in the global South (Rogers 2003, Roling 2004). Since the Rockefeller Foundation's funding of crop breeding research that would eventually be called the Green Revolution, the idea that the diffusion and adoption of technologies created primarily in the US is essential for economic growth elsewhere has dominated African agricultural development. This is an articulation of the long-standing promise of economic "connectivity" as aid/growth/development. Its roots are in the civilizing missions of colonial Africa, taken up post-independence by Bretton Woods institutions like the World Bank and the International Monetary Fund.⁴ In 2008, when a cascading financial collapse threatened the economies of the global North, the narrative regarding Africa's place in the world began to shift. The current trend is to focus on the

⁴ One example of this type of connectivity were the structural adjustment programs (SAP) of the 1980s and 1990s, which resulted in the greatest peacetime transfer of wealth from poor to rich countries in history (Shah 2013, Smith 2017). SAPs also fundamentally changed the way states supported agricultural development through their use of aid conditionalities, which forced governments to privatize many sectors of the economy.

importance of Africa in assuring global economic health – referred to as “Africa Rising.”⁵

However, the geographical imaginaries which posit Africa as lacking the technical and political skills necessary for autonomous development persist, and the technology transfer discourse remains dominant in agricultural development.

The holy grail of agricultural technology transfer during the 20th century has come to be known as the Green Revolution (GR). Organized and funded by the Rockefeller Foundation (in partnership with US and international organizations), the GR was a set of research and development technologies designed to increase crop yields across the globe, primarily in Mexico, India, and the Philippines. Ostensibly aimed at addressing hunger, the GR functioned as much as a political imperative as a humanitarian one – conceived of in the context of rural poverty in the American South and spread to Mexico during a period of struggle over land reform (Olsson 2017). It was not only a technical intervention, but specifically concerned with transforming state institutions and, later, integrating small farmers into global commodity crop markets (Patel 2013). Proponents of Green Revolution technologies, which include increased fertilizer, pesticide, land, and water use, often point to the huge gains in wheat and rice yields that occurred in Southeast Asia during the 1960s and 1970s (Conway 1997, 2000). Critics observe that these increased yields did not lead to substantive reductions in poverty, but rather benefitted medium to large-scale commercial farmers while causing widespread environmental destruction (Freebairn 1995, Das 2002). Though the outcomes of the GR are contested, the idea that “food security” requires the social and technological modernization of agrarian systems is still

⁵ Once labeled “hopeless” by *The Economist* (May 13, 2000), Africa is now seen as a popular post-crisis investment destination for private equity firms who work with governments, development organizations, agribusinesses, and multilateral donors to capitalize on the potential of African agriculture. *The Economist* devoted a special issue to “Africa Rising” (March 2, 2013), describing the continent as “hopeful” and full of potential to take its rightful place in global capitalism. Bill Gates has also taken up this language in his Annual Letter (2015).

dominant in international agricultural development.⁶ This is in large part due to the perceived success of high yielding crop varieties associated with the GR.

Advocates for technology transfer as agricultural development also argue that the Green Revolution “bypassed” Africa, and that a New Green Revolution is needed for Africa to realize the gains in agricultural productivity that the rest of the world has already seen (Conway 1997). The Gates Foundation has invested over \$430 million since 2007 in AGRA (the Alliance for a Green Revolution in Africa) to realize this goal.⁷ The argument from the Gates Foundation is that increased productivity leads to increased farmer income which allows farming families to improve their livelihoods. This is to be done by building an “alliance of partners” – including farmers and their organizations, governments, agricultural research organizations, the private sector, local nongovernmental organizations, and civil society – that stem from the two founding organizations, the Rockefeller and Gates Foundations.⁸ The critiques of AGRA are well documented (ABC 2012, 2013), but in terms of GM crops the main concerns deal with direct intervention in biosafety policy and a privileging of lab science over knowledge produced in the field (GRAIN 2014). While AGRA does not directly advocate for transgenic technologies, it does aim to transform the agricultural sector and food systems in Africa by developing and delivering hybrid seeds.

The Gates Foundation is not only the financial backbone of AGRA, but also the largest supporter of research and development for GM crops on the continent. This is mainly through the WEMA project, but includes other AATF projects as well as the Agricultural Biotechnology

⁶ In fact, one of the main goals of the GR was the transformation of the peasant as a strategy to fight communism (Cullather 2013).

⁷ <http://www.gatesfoundation.org/How-We-Work/Quick-Links/Grants-Database#q/k=agra>

⁸ <http://www.gatesfoundation.org/How-We-Work/Resources/Grantee-Profiles/Grantee-Profile-Alliance-for-a-Green-Revolution-in-Africa-AGRA>

Support Program (ABSP) and the Program for Biosafety Systems (PBS).⁹ In Kenya, the Gates Foundation funds all of the biotech projects currently underway at KALRO.¹⁰ The justification for such large-scale intervention is taken directly from revised Green Revolution narratives – new seed technologies must be made available to small-scale farmers to solve widespread hunger. But if the GR did not solve the problem of hunger (Patel 2013), and many African social and ecological systems have proven too complex for high-input, export-driven, US-style farming models (Scoones and Thompson 2011), why are these technologies being funded by philanthropies focused on alleviating hunger? Investigating philanthropic support for GM crops in a country which has banned them helps illustrate what economic connectivity looks like in the colonial present – enclosure.

The limits to capital

The primary argument in this chapter is that the Gates Foundation supports Monsanto as an instance of “capitalists helping capitalists” fix their crises of capitalism. The history of philanthropy is the history of the wealthy trying to avert labor (and other) rebellions by appeasing the poor and redirecting their rights claiming strategies.¹¹ The Gates Foundation is doing this not just by providing money to feed/appease the poor, but doing so in a way that makes those poor a new market for a risky technology at the same time that it appropriates publically produced germplasm. David Harvey’s “magisterial” text on the uneven geographical development of capitalism, *The Limits to Capital*, gives us a way to understand this in the global

⁹ The Gates Foundation supports biotech crop research at the Donald Danforth Plant Science Center in St. Louis as well as at US universities such as Michigan State and Kansas State. Africa-based NGOs receive only 4% of all Gates Foundation agricultural development funding (GRAIN 2014).

¹⁰ Per the head of KALRO’s Biotechnology Center, Gates funds: WEMA, VIRCA (virus resistant cassava), and BioCassava Plus.

¹¹ See: Debates chapter. The Rockefeller and Carnegie Foundations were strike-busters at the same time that they provided immense funds for social welfare.

landscape (Jessop 2014). In terms of the logic of capital accumulation, one of Harvey's most important geographical contributions was the concept of the *spatial fix*. Per Harvey, a spatial fix describes "capitalism's insatiable drive to resolve its inner crisis tendencies by geographical expansion and geographical restructuring" (Harvey 2001). It does this not only through physical changes in the landscape – shifting production locations, for example – but also through market expansion and the creation of a proletariat (i.e. separating peasants from their modes of production). Spatial fixes can only be temporary, as the search for solutions to the contradictions of capitalism only reproduce crises in other places.

A variety of scholars have found the practices of modern biotechnology to indicate a significant restructuring of political and technical forms of governing life under capitalism. Many of these situate biotechnology in the realm of *primitive accumulation*, an ongoing process which Harvey (2003, 2004, 2005) labels "accumulation by dispossession." Prudham (2007), for example, argues that patenting genes and other biological processes can be seen as an "extra-economic" means to expand the scale and scope of capital accumulation. McCarthy (2004) prefers to retain the term primitive accumulation in his discussion of Trade Related Intellectual Property Rights (TRIPs) because rather than enclosing nature to keep it from all others, TRIPs privatize the "right to transform and exploit general, social nature in ways that will directly harm others" (p. 337). In other words, they affect the *conditions* of production, rather than the means (Harvey 1982). Other works focus on the commodification of life (Kloppenborg 2004; Buttel 1989, 2003a) or the more general commodification of nature (Bakker 2010, Mansfield 2007). Moore (2010) suggests that while it is easier for capital to appropriate nature than to produce it through circuits of capital, the possibilities for this become less and less as the spaces for

appropriation shrink. Smith (2006), however, sees the production of nature entering a new phase to address this crisis, characterized by “capitalization all the way down” (p. 21).

Privatization is understood in this literature as Marxist dispossession, as “the central assumption” and “necessary precursor” to neoliberal forms of capitalism (Mansfield 2007). Prudham (2007) understands privatizations, such as the patenting of life, to be key *relational* moments in the commodification of nature. In other words, privatization is a means by which the capacity to circulate capital is enhanced (Prudham 2007, p. 412). Prudham extends Kloppenburg’s (2004) argument to see privatization not only as a way of making social claims to nature, but also as “a legal and institutional strategy aimed at repressing the self-reproducing character of life” (p. 414). What is important here is that commodification is not just about the resources necessary to produce life, but actual life itself. This requires paying attention to the concept of life as it relates to sovereignty in a slightly different way, one that focuses on reproduction within the seed itself. What this suggests is a double commodification of life through the agricultural process, with infinite potential for capital to seek spatial “fixes” at the genomic level as well as to define life as property in new ways. Molecular life becomes property, and as such changes the way that we think about the “subject” of capitalism.

The precarity of biotech

One of the reasons that crop biotechnology requires philanthropic support is that biotech corporations are having an identity crisis in their primary market, the United States. Though over 90% of US corn, soybean, and cotton acres are planted with GM varieties, there has been consumer backlash to their widespread use in processed foods. Recent studies show that millennials are skeptical of GM foods (Bruno and Campbell 2016), and the American “aversion”

to GM foods is gently increasing, compared to sharp increases in the EU (Dannenberg 2009). In 2016, President Obama signed a federal bill requiring the labeling of products made with GMO ingredients, but critics argued that the bill was too soft, preferring the more rigorous laws passed and/or being considered by individual states (such as Vermont). The more lenient bill might help food producers in the short run, but consumers increasingly want to know what is in their food, as well as the social and environmental costs of industrial agriculture (Buttel 2003b).

These trends, combined with slumping corn prices from yearly surpluses, have hurt companies like Monsanto, whose best-selling product is GM corn (maize) seed.¹² At the end of 2015, Monsanto announced plans to cut a total of 3,600 jobs over the next two years (about 16% of its global workforce), including the closing of three research and development centers. This restructuring is driven by ever-larger quarterly losses from falling biotech seed profit.¹³ In areas where GM seeds are approved (like the US), markets are essentially saturated. Mike Mack, former chief executive of Syngenta (a Swiss-based agri-business company that dominates the global agro-chemical market and produces biotech seed) argued in 2015 that Monsanto's core markets were not only saturated but that it also lacks "fundamentally new innovation" to propel it forward (*The Economist*, April 29). His remarks suggest that this condition applies to biotech seed in general (Ibid): "Show me the new markets or the new crops that are going to bring the sort of wave that we saw in the last decade. I don't see how it's going to pick up in any material way."¹⁴

¹² Round Up Ready maize, Bt maize, and maize with "stacked"(both) traits

¹³ The *Wall Street Journal* shows steady quarterly losses from 2014, with Monsanto just recently (2017) returning to profitability due to the merger with Bayer and "expanded South American corn planting and currency shifts." Sales from 2014-2016 can be seen in Monsanto's 2016 Annual Report:

http://www.monsanto.com/investors/publishingimages/annual%20report%202016/2016_monsanto_annual_report.pdf

¹⁴ Also see: Bunge and Mukherji (2016) on why Monsanto's business is not growing in India

Not only is the US, as the world's largest biotech seed producer and consumer, seeing markets decline¹⁵ and resistance to GM foods increase, but previously supportive "developing" countries, such as India, Argentina, and Burkina Faso, are debating issues of regulation, royalty collection, and production quality in regards to GM crops. The uncertainty surrounding these debates weakens global biotech markets. In March 2016, India's Ministry of Agriculture imposed a 70% cut in royalty fees that Monsanto charges for their cotton crop genes, which threatens all Monsanto licensing ventures in India (Mulvaney 2016). Argentina's currency devaluation poses a similar threat to royalty fees (Bunge 2016). In Burkina Faso, the poster-child for GM crop success in Africa, President Kabore recently announced that permission to grow GM cotton would be withdrawn from 2018 onward, due to problems with cotton lint quality (Krininger 2016). Burkinabe cotton companies themselves have been reducing the available amount of Bt cottonseed since 2015 and plan to fully convert back to conventional seed by the 2017/2018 growing season (Dowd-Urbe and Schnurr 2016). The statistics for GM crops globally are still rather impressive, as they are considered the fastest adopted technology in modern agricultural history. Grown in 28 countries over 444 million acres, the area of GM crops planted has risen almost 100 fold over the last twenty years (James 2015). Present day politics could soon reverse that trend, however, as 2015 brought the first year of decline (in terms of acres planted) in the history of GM crops (James 2016).

Traditional biotech markets are declining, and the context in which agricultural development is being articulated in Africa has also changed dramatically in the last ten years, especially in terms of increasing investment from private sources. This makes Africa an attractive investment destination for new agricultural technologies. Investment in African private

¹⁵ Mainly due to problems with Bt (*Bacillus thuringiensis*) resistance in US maize (Gassmann et al. 2014).

equity funds by investors working with multilateral development agencies has reached over \$8 billion since 2008 (Mullin 2010). These were *all* agricultural investments, including land and agribusiness purchases, production and distribution support, and other investments along the value chain. In 2012, for the first time ever, developing economies absorbed more foreign direct investment (FDI) than developed countries, whose inflows dropped by 32% from the previous year (UNCTAD 2013). Africa has been a bright spot in an otherwise fragile global financial system, registering increases in FDI for 2012 and 2013 – the only region in the world to do so. These investments are conceived of as a path toward agricultural development and food security for the continent, though it should be noted that many firms promise exceedingly high returns for investors.

This private investment is driven, in part, by an increased attention to African smallholders by large philanthropic foundations. In the last five years, the Gates Foundation has provided over \$2 billion in grants for African agricultural development, making up 5% of all African agricultural investment, public or private.¹⁶ This makes their voice one of the loudest shaping agricultural development policies and projects, and means that their goals and strategies have great potential to affect change on the continent – especially the idea of partnerships. Bill Gates’s decision to purchase 500,000 shares of Monsanto stock in 2010, along with the Foundation’s funding of projects focused on improving crop genetics, makes this particularly relevant to the biotechnology debate. Additionally, Bill Gates’s own personal faith in technology as a driver of progressive social change, his history of aggressively protecting patents on software at Microsoft, and his own ‘non-competitive’ business practices at that company cannot be separated from the strategies behind his Foundation’s practices in Africa (Goodell 2014).

¹⁶ Personal communication with Gates Foundation research analyst, 3 April 2014. UGA campus.

Appropriation

Drought tolerance (or “water efficiency”) in WEMA seeds comes from several different sources. Primarily, it comes from years of public breeding through the Kenyan Agricultural and Livestock Research Organization (KALRO, formerly KARI) and CIMMYT (the International Maize and Wheat Improvement Center). For decades, KARI and CIMMYT bred conventional maize for many desirable traits, including for better performance in dry conditions. This resulted in maize germplasm that is well-suited to conditions in Kenya.¹⁷ Monsanto donated three transgenes (two for insect protection and one for drought) to the project, as well as some germplasm at the outset. These “donations” include MON810, a first generation GM maize crop designed for insect resistance, as well as MON87460, maize genetically modified for drought tolerance through the *cspB* gene from *Bacillus subtilis*. Field trials were begun on MON87460 in Kenya, but not approved for commercialization.¹⁸ MON810 was commercialized in South Africa and is now considered to be a “failure” for the WEMA project (ACB 2013b). In Kenya, the GM crop that is currently being evaluated for commercialization is the product of conventional WEMA maize (called DroughtTEGO™) modified with the Bt gene for insect protection.¹⁹ Most Kenyan media outlets simply refer to it as Bt maize, or GM maize, but this condenses the enormity of the WEMA project into a generalized term and suggests one product as output, rather than the potential for hundreds of (transgenic) varieties. To avoid confusion, I call this Bt TEGO.

¹⁷ Each of the other WEMA countries’ national agricultural research stations have developed improved (public) germplasm as well, and put it in the WEMA “pot.”

¹⁸ Transgenic drought tolerance did not have enough “impact” to go to market. See: Waltz (2014)

¹⁹ Bt (*Bacillus thuringiensis*) is the toxin used to control the European stem borer, one of the largest threats to domestic maize production in Kenya. On average, stem borers reduce annual maize production in Kenya by 13%, or 400,000 tons (De Groote 2002). This is valued at about \$76 million USD (De Groote et al. 2011).

The reasons for conferring insect resistance upon a crop designed and named for drought tolerance is complex. Administrators in KALRO acknowledge that for transgenic crops to flourish in Kenya, and therefore regionally, the WEMA project needs to be a huge success. One administrator said that initial drought tolerant varieties were doing well in field trials (this was before the GMO ban), but that “Gates wanted a bigger impact.”²⁰ This is consistent with the Gates’ motto “take risks, make big bets, and move with urgency,” and reflects the amount of power the Foundation holds over crop research decisions in developing countries.²¹ Other plant breeders suggested that it was the effectiveness of the crop during field trials in Kiboko that necessitated introducing the insect resistant gene.²² Because the drought tolerant maize survived in areas where other maize would not grow, insects flocked to these test sites and destroyed crops. This narrative positions Monsanto’s contribution as ecological/technical, as opposed to economic, in an effort to depoliticize corporate intervention.

Opponents to crop biotechnology in Kenya have a different rationale, however. A member of Growth Partners Africa explained that the gene that confers drought tolerance (the cold shock protein gene that Monsanto donated, *cspB*) is both publically available and not very effective at addressing drought. Additionally, he suggested that MON810, which, as a first generation GM effort that has seen yields decline over the years, functions less as an effective technology and more as waste from the corporate research and development process. He sees this type of economic connectivity falling into the historic pattern of colonialism, rather than “innovation”:²³

You are donating your washed-out, torn rags and used [stuff] and saying we should really rejoice and bring out the drums and play music because you are being philanthropic to

²⁰ Interview at KALRO (7.29.15)

²¹ <http://www.nature.com/articles/nplants201522> and <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2373372/>

²² Interview at University of Nairobi (7.28.15), Interview at AATF (6.17.15)

²³ Interview at Hotel Luke (6.12.15)

us...So, these people have put in 50 years of breeding research, whether it's CIMMYT with public institutions in all these countries, whether it's just the public research institutions themselves. That's more than 50 years of taxes and local sweat. So, you put your best into the pot and Monsanto comes in and puts in something that they pulled from the public, or something that's failing, and how can that relationship be equal?

What does happen is that the publically developed and owned germplasm plus the donated Monsanto genes become property of the WEMA project. The member of Growth Partners Africa considers this “straight up robbery.”²⁴ Not only is drought tolerance available without transgenics, but Monsanto now has access to germplasm that took years of labor and public funding to develop. Yes, Monsanto is providing insect resistance, but it is doing so at little cost and great gain. The US patent on MON810 expired in November 2014, meaning that the technology is no longer profitable for Monsanto in the US context.²⁵ This is why it was “donated” to the WEMA project – as industrial waste to be repurposed via a spatial fix. Monsanto gets access to new markets and a public relations boost from its philanthropic actions without having to develop a new product.

Monsanto's website notes:²⁶

Monsanto contributions include providing maize germplasm to enable the breeding efforts, offering technical expertise to develop and deploy locally adapted maize hybrids, and donating its commercial drought-tolerance and insect-protection traits royalty-free to all seed companies in Africa.

While it is true that Monsanto provided the technology royalty-free to the AATF, this does not translate to “free” for farmers.²⁷ Seed sub-licensed through the AATF to Kenyan seed companies will be at market price. And “market price” could still make these seeds inaccessible for poor

²⁴ Interview at Hotel Luke (6.12.15)

²⁵ Once the US patent expired, other breeders gained access to the technology to produce their own products.

²⁶ <http://www.monsanto.com/improvingagriculture/pages/water-efficient-maize-for-africa.aspx>

²⁷ See: Dumont (2015) for an explanation of different forms of ownership. Monsanto retains control over all data generated with “the Event” (the unique DNA recombination event that took place in one plant cell) as well as studies, permits, and registrations. Registrations can be viewed as a form of intellectual property protection, as they are required to license traits in African countries (patenting an event and being able to use the trait are two separate things). Trait license agreements contain obligations that extend beyond the patent term of an Event.

farmers. If Monsanto wishes to be competitive with future products, it might have to take an initial loss, and in the process, undercut local seed companies. Already six Kenyan seed companies have received sub-licenses for WE 1101 (DroughtTEGO™) to make the conventional maize available to the public. This happened without Monsanto's help. And though WEMA's Bt TEGO will be cheaper than if licensed directly from Monsanto, one of the outcomes will also be dependence on insect-resistant maize. Monsanto crops sold in Kenya in the future, which will not be royalty-free, could be outside the reach of most Kenyan farmers.

Germplasm is not the only thing being appropriated. Though headquartered in Kenya, the WEMA project's technical capacity comes primarily from South Africa. KALRO's plant breeders note that all seed work is done by Monsanto, either in South Africa, Chile, or the US.²⁸ That seed is then sent to the other countries for field trials. The WEMA Regulatory Affairs Manager for Monsanto said this was mainly due to "quality control" concerns, as South Africa has better capacity to develop seeds.²⁹ Essentially, this means that germplasm is taken from Kenya, developed and improved elsewhere, then sent back to Kenyan field sites. There is little investment in capacity building in Kenyan labs, and no possibility for profit in country. Kenya, and the other WEMA countries, are used for their crop diversity (in terms of germplasm), land, and future markets. One UGA Crop and Soil scientist described farmers as "pawns" in a larger attempt to revive profits for crop biotechnology in the US.³⁰ In this framing, the possibility of African farmers benefitting from transgenic seed development would be an unintended consequence of corporate profit seeking through expanded markets. As the African Center for

²⁸ Interview with Head of Biotechnology Center at KALRO (7.29.15)

²⁹ South Africa also has two growing seasons in some areas, giving them the ability to work longer and faster.

³⁰ Interview on UGA campus (4.6.2016)

Biodiversity has illustrated, the efforts of AGRA³¹ are contradictory – they are focused on technical and organizational skills and knowledge for plant breeding and seed improvement, yet they simultaneously lay the groundwork for future expropriation and extraction, specifically in their construction of legal and institutional frameworks around crop biotechnology (ACB 2012). What the WEMA project shows is that this technical capacity building is uneven, occurring in places that already have the ability to generate surplus value through technology and infrastructure (i.e. South Africa). Places without these inputs are more likely subject to accumulation by dispossession, through pathways related to genes, land, or labor (White et al. 2012).

Partnership

To conceive of a partnership in this context is complicated. It is clearly uneven, prioritizing donor ambitions and technical expertise over local needs and competencies. Its goal of alleviating poverty seems out of place as well, with little link between “the poor” and the technologies that are supposed to help them. The promise of the WEMA partnership is supposedly between smallholder farmers and corporate innovation, but in Kenya, there are no smallholder farmers growing GM crops. And, unless the ban is repealed, there will not be. The partnership is actually between Monsanto, the AATF (funded by Gates), KALRO, and

³¹ Though AGRA and WEMA are separate projects, it is impossible to separate their effects on agrarian systems in Africa. The Gates Foundation website (<http://www.gatesfoundation.org/How-We-Work/Resources/Grantee-Profiles/Grantee-Profile-Alliance-for-a-Green-Revolution-in-Africa-AGRA>) describes the AGRA partnership as more than funding: “AGRA is one of our anchor grantees on the continent and will continue to be a key actor in African agricultural development... We have a different level of engagement with them.” The closeness of the relationship is easily seen in AGRA communications: ““Our work involves a lot of innovation and risk taking. This involves learning from our mistakes and scaling up our successes. Sometimes we try out a new idea and it doesn’t work as efficiently as we envisaged in the planning process. It is a mutual learning relationship, and we meet the challenges and opportunities together... We have a shared vision with respect to the plight of smallholder farmers in Africa and are convinced that the continent has an **unexploited** potential to feed its citizens and achieve food security.”

CIMMYT.³² When we look at what each group puts in and gets out of this partnership, we see tangled and overlapping identifications with humanitarian narratives of poverty reduction – each motivated by a different goal. The “primary” partnership goal of ending hunger and poverty functions as a guiding narrative, but individual goals are just as likely, if not more, to shape outcomes. In this context, the Gates Foundation’s support for Monsanto stands out as dominant influence.

As detailed above, Monsanto’s main contributions to WEMA are royalty-free commercial traits. MON810 has lost its profit potential not only from the expiration of the patent (which allows competitors to produce generic, cheaper seed) but also in terms of its performance, which has deteriorated over the last decade. For this contribution, it receives a potentially enormous reward – the rescue of its biotech seed market in the next 10 years (if it can gain access to African markets). As Monsanto’s Corporate Affairs Lead for East Africa explained, Monsanto makes no money off of WEMA. The project is all about “trust and image.”³³ WEMA functions as a relationship builder for Monsanto, setting the stage for future markets such as “Bt cotton or crops with a Round Up trait,” which they would charge royalties for.³⁴ These future markets must include small-scale farmers in Africa, who make up 80% of African agriculture. This is not lost on Monsanto. As the same Monsanto employee noted, “The small-scale farmer is an important segment [of our business]. Without them, there is no business in Africa. We must try to make their lives as easy as possible.”³⁵

³² Funding has also come from USAID and the Buffett Foundation, but these partners are mainly financial and have little input into strategy.

³³ Interview at Monsanto headquarters, Nairobi (6.16.15)

³⁴ Ibid.

³⁵ Ibid.

But who decides what “makes lives easier” for these farmers? When asked if Monsanto or the Gates Foundation drives WEMA’s agenda, Monsanto’s representative responded, “It is a philanthropic agenda. It is good. It is about health, agriculture, and education.”³⁶ In the partnership, that manifests as control over decision-making processes. According to the AATF, the Product Development team is the only WEMA team led by Monsanto. The rest are led by the AATF. This means Monsanto has direct control over what material is chosen for research and development, and what eventually goes to market. CIMMYT and KALRO each have representatives on this team who present their own data and nominate material as well.³⁷ But they do not have the profit motive driving their data. And, as Monsanto’s representative admitted, “Monsanto’s focus is not necessarily on drought, but on “mid-altitude” crops and their constraints.”³⁸ This makes sense from a marketing standpoint. As one Kenyatta University plant breeder put it:³⁹

A company like Monsanto focuses on things that are overlapping, in different regions, because also it is about market. Once you have a GM, you don’t want to sell it to Kenya. You want to sell it to the entire region. And drought is one thing that is cutting across the region. If you look at maize, maize might not be an interest in Uganda. Because they are largely in banana. And if Monsanto is looking at dealing with some of these things, they will bias their research in terms of also looking at the market which is there. That is why drought is one big thing that is cutting across and that is very good to study.

The AATF sees this as a “win-win” situation. The WEMA project leader explained that Monsanto “also wants to solve poverty,” and that with Monsanto’s help “everyone gets richer.”⁴⁰ The problem with the philanthropic agenda (besides it being untrue that everyone gets richer) is

³⁶ Ibid.

³⁷ CIMMYT is responsible for evaluating the hybrids that the transgenes will modify. From 2008-2012 (the beginning stage of WEMA project), CIMMYT developed tropical maize parent lines and sent the best conventional material to Monsanto, who is responsible for almost all of the transgenic work. This has been a continuous process of selection and distribution to Monsanto for conversion.

³⁸ Ibid.

³⁹ Interview at Kenyatta University (7.15.15)

⁴⁰ Interview at AATF (6.17.15)

that the Gates Foundation and Monsanto are in clear positions of control, as exemplified by Gates pushing for “higher impact” results⁴¹ and Monsanto controlling product development. Could Bt TEGO help smallholder farmers? Maybe. But results of similar partnerships in South Africa and Burkina Faso suggest that this is unlikely.⁴² And they cannot help in a country that has a ban on GM crops. What the philanthropic struggle to develop and commercialize GM crops in Kenya does do is take public resources, time, and energy away from alternative poverty reduction strategies (and low-tech agricultural solutions) while at the same time enrolling public officials in embedding market practices more thoroughly in NGOs and state institutions. If these private donors and corporations invested in crop biotechnology projects on their own, they would be critiqued as economic imperialists. The partnership is required to prevent this critique. Yet, the structure of the partnership itself is shaped by imperial geographies.

The Gates Foundation, whose inputs are “purely financial” according to the AATF, holds enormous influence on product development because they provide the funding. In terms of trust and image, challenging the Gates Foundation on biotechnology would be bad business for plant breeders in Africa. Though most of their money is spent in wealthy countries, the Gates Foundation has dramatically increased its spending on African agricultural development programs in the last decade (Lawrence et al. 2015). The critique is that the weight of the Foundation’s support for technology and private partnerships is specifically anti-farmer. They fund scientists (not farmers) and organizations in “the global North” and they buy political influence through “policy action nodes” (GRAIN 2014). The Foundation is cultivating an image

⁴¹ WEMA is supposed to reach 550,000 farm households (times 6 for the number of people per household) in the next 5 years; the project head stated: “Imagine what we will do in ten years.”

⁴² The Monsanto representative cited the Burkina Faso cotton partnership as an example of GM crops helping smallholder farmers. Currently, Monsanto is being sued in Burkina Faso for \$84 million for degrading the quality of Burkinabe cotton. It is also suspending activity in Burkina Faso because the country has placed a ban on GM cotton. In South Africa, MON810 began developing country-wide resistance to stem borers within the first decade of planting (1997-2007). This was before it was donated to the WEMA project. See: Kruger et. al (2011).

of public savior through its massive grant program, but this image does not match up with outcomes that are “pro-poor” in the agricultural sector. Additionally, it is co-opting relationships typically administered by government agencies who lack the funds to dictate their own agendas.

Even more worrisome is that the Gates Foundation’s relationship to its projects are not transparent. Figure 1 (below), for example, is from a workshop presentation by the AATF, detailing the partnership structure of the WEMA project:

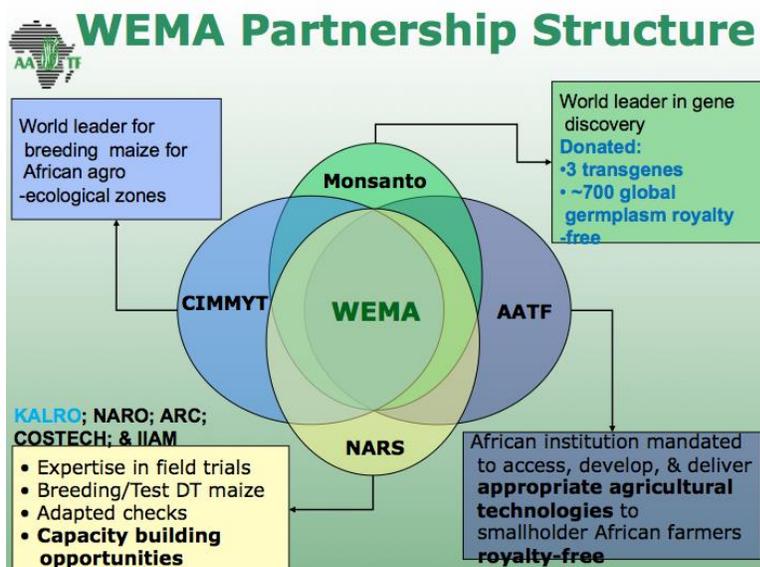


Figure 1: WEMA Partnership Structure
 Source: STAK-AATF Workshop Presentation, Nairobi (May 2015)

The Gates Foundation is noticeably absent from this structure, suggesting that the WEMA project runs autonomously from donor interests. Yet, in interviews with project members, the Gates Foundation was often cited as the reason why particular decisions were made, or why data could not be shared. “Purely financial,” rather than meaning “no say” in decision-making within the project, actually means significant influence at various levels of project governance.

The WEMA Project Leader also commented that the Gates Foundation’s goal is to “to move people out of poverty. That is all they are interested in.”⁴³ If so, how is this measured? If the “new” philanthropy’s focus is on strategic investment and measurable results (Rogers 2015), then one would assume that the Gates Foundation would look at project outcomes in Africa and conclude that biotech is a risky investment, especially for smallholder farmers. Not only do they have the Burkina Faso and South Africa experiences⁴⁴, but groups such as the African Center for Biodiversity and the Alliance for Food Sovereignty in Africa have shown, through both research and activism, that GMOs are not fulfilling the promise of food security for African smallholders (ACB 2015, 2016). There is also political resistance in the form of the Kenyan ban. Instead of respecting national policy, the Foundation pursues crop biotechnology relentlessly, funding not only crop development, but also policy work to “deregulate” GMOs and open up African seed systems (see Appendix C, Table 6). There is a disconnect between the proposed problem and the proposed solution in this context. While drought and pests are a problem for farmers, and could use technical fixes in certain times and places, the link between growing more maize and poverty reduction is not straightforward. If the Gates Foundation wants to address this link, it has to address a much broader set of practices than crop breeding. This is not a skill set it has yet cultivated.

⁴³ Interview at AATF (6.17.15)

⁴⁴ In South Africa, it is estimated that Monsanto’s GM “Droughtgard” maize (MON87460) will increase productivity by approximately 1% - roughly the same as annual maize productivity increases resulting from conventional breeding for drought tolerance (Gurian-Sherman 2012). This is after MON810, after being widely planted in South Africa for 15 years, developed insect resistance and had to be withdrawn from the market (ACB 2013b). In Burkina Faso, Bt cotton has been banned due to poor quality, and Monsanto is being sued for damages.

Discussion

The literature gives us several ways to approach this disconnect as it relates to the larger motivations of the Gates Foundation's work: as an outcome of donor guilt and shame (Hay and Muller 2014), a manifestation of the white savior industrial complex (Cole 2012), and/or "the most productive mid-life crisis in history" (Nunez 2011). Each of these frameworks puts Bill Gates' personal ideology and leadership style at the forefront of the Foundation's development strategy, suggesting that his command over the organization makes technological innovation and patent protection the starting point in any solution to poverty. This is an issue not only because there is little to no farmer input in the development process, but also because solutions based on private property are being transferred into social systems based on communally managed resources. Monsanto and the Gates Foundation have a convincing platform for the privatization of Kenyan seed systems, and WEMA gives them the opportunity to implement it.

This style of partnership differs from public (non-proprietary) science, and has broader implications for the governance of GM crops (See Chapter 3). The WEMA Project Leader explained that some public-private partnerships fail because "they don't respect confidentiality. It is all about trust [within the partnership]."⁴⁵ This was in response to requests for data on Bt maize yields in the WEMA project, which are not publically available. The public, he said, has little need for any of this information because they would not know what to do with it. The only group that actually needs to see data are the regulators (the National Biosafety Authority). The partnership, therefore, does not require trust in either smallholder farmers or the general public. The confidentiality required to protect patented property also means that independent researchers have no access to WEMA data for third-party investigations.

⁴⁵ Interview at AATF (6.17.15)

So, what does the Kenyan government get out of a project like WEMA? KALRO's primary contributions are the testing sites for confined field trials. It also contributes a small amount of germplasm, breeders who are involved in "the follow up," and technicians for testing. It receives *the possibility of* food security, capacity building, poverty reduction, and external funding. Of these possibilities, the only one that has actualized through the WEMA project is the funding partnership.

The end result is that strategies for the funding of public goods and services as well as the day-to-day management practices of agricultural projects begin to take on more and more characteristics of the American corporate system. This is beneficial to both the state, which needs funding, and the plant breeders and other middle class Kenyans working in the biotech industry, because they need the jobs. It also is obviously beneficial to Monsanto and the Gates Foundation, who find new markets and justification for their intervention into African rural farming systems. But just like the Green Revolution, the group that does not realize the promises of these technologies and partnerships are "the poor." Yet the narrative persists that just given time and deregulation crop biotechnology will help solve hunger. It is very hard to believe this would ever be true considering the unevenness which this kind of intervention promotes. The most likely outcome of the WEMA project is the provision of the cultural and material conditions necessary for a spatial-temporal fix to Monsanto's crisis. In short, the overall outcome of the Gates Foundation subsidy of Monsanto's humanitarian intervention in Africa will be to keep crop biotechnology alive in the US. This is how a US corporation's search for capital accumulation (solving problems of overproduction via a spatial fix) produces biotechnology as a global phenomenon – through its' search for other places in which to intervene. But the more dangerous result is that the humanitarian narrative that supports philanthropic intervention in agricultural

development bolsters the processes of “partnership” which include appropriation, institutional take over, and a hollowing out of state function (Chapter 3).

Conclusion

In December of 2016, Monsanto shareholders voted overwhelmingly to approve the \$57 billion purchase by the German-owned Bayer Group. Though the regulatory approval process will likely take until the end of 2017, Monsanto’s CEO remains “confident” that the merger will go through, despite President Trump’s comments registering disapproval of the foreign take-over of US companies. Monsanto’s sale is a clear signal of its need to diversify and innovate to stay viable as a chemical (life sciences) company. It cannot do this on its own. In the face of declining sales and markets, it is seeking both cultural (the moral imperative of humanitarian capital) and economic (the financial necessity of a merger) fixes to its crises.

Monsanto would not be able to seek this spatial fix (new markets) without the humanitarian capital of the Gates Foundation. Critiques of corporations and their “insatiable” drives have resulted in heavy resistance to Monsanto and its products, stemming from their harmful environmental effects as well as their consolidation of control over the seed industry. The new markets and higher demand products required to keep Monsanto profitable are difficult to find given its history, which has led to skepticism and distrust. Presenting themselves as a philanthropic partner with the Gates Foundation is an attempt to reclaim that trust. It is the cultural component necessary for a spatial fix.

What we see in the WEMA project is a reproduction of many of the problems of colonial extraction and appropriation. The capital that is produced is accumulated “offshore” (South Africa and the US) and the problems of poverty that are to be solved by better national and

global governance of resources are still focused on exporting resources. This does not change the fundamental structure of economic imperialism. As the literature on relational sovereignty has shown, taking into account the ways in which non-state actors control resources is as important as dealing with state control (Emel et al. 2011). We also know that spaces of public agriculture are being replaced with private business practices and control. Specifically for biotech, genetic resources are being appropriated through philanthropy (Thompson 2014).

In most of the literature on appropriation, specifically in the biotech context, corporations are often positioned as the bad guys, fighting for intellectual property rights in courts and through the creation of legal frameworks as well as consolidating control over seed and chemical networks through market dominance (Kloppenber 2004, Cooper 2008, Otero 2012). But the “game changer” in the WEMA partnership is the Gates Foundation, as the vehicle for bringing best business practices to development. This is not a result of the actions of any one strategy, program, or grant officer, but the forces behind their actions – the promotion of venture capital as a mode of development governance. This mode of governance circulates narratives of efficiency via “monitoring and evaluation” that crowds out all forms of value outside of technical measurement. Yet the items they measure and evaluate seem to have little relationship to poverty alleviation. This points to one of the main problems with philanthropic capital as a mode of public service provision. The lack of accountability (to the Kenyan state or the poor) means that the primary recipient of “help” in the WEMA partnership is Monsanto.

Why does the Gates Foundation get to decide how and why US crop technologies are disseminated in Africa? Though the government of Kenya can hardly be seen to be homogenous, why can it not make its own decisions regarding agricultural policy without direct intervention by philanthropies? Part of the answer lies in its colonial history, the hegemonic position of

privatization narratives in public service provision, and a deep distrust of the Kenyan government by its citizens. But the other answer is that the Gates Foundation does not feel the “nuisance of democracy” like a government or a grassroots organization does (Barkan 2016). It has no one to answer to, and no lack of funds to make it subservient to any other organization. This means that it can follow its founder’s own personal philosophy, forged over decades of profiting off of monopolistic corporate patents while reifying a faith in technological innovation that was actually the product of inherited wealth. Bill Gates is not shy about linking his view of science to governance: “If you’re not bringing math skills to the problem, then representative democracy is a problem” (Bennet 2015).

Though previous research has already identified WEMA as a project designed to create new seed and pesticide markets for Monsanto in Africa (ACB 2011), this chapter argues that it is important to understand the implications of this project for the future of crop biotechnology on a global scale. It shows a series of processes by which private capital appropriates public resources. Philanthropy is the vehicle that makes this possible – remaking the public sector into the business images of corporations. WEMA provides a geographical and temporal fix to the current crisis in global biotech seed markets, rendering them less vulnerable to competition (in ecological, financial, and social terms) from alternative farming models. Without new African markets, the future of crop biotechnology looks bleak, and increases the potential for anti-industrial farming models to take hold globally. The outcomes of the WEMA project for smallholder farmers is less clear, but unlikely to reach the level of solving hunger and poverty for a continent. Corporate partnerships like WEMA do succeed in one main respect, transferring the US business culture to Kenya and overshadowing the rights-claiming culture of small farmer organizations and other marginalized groups. This means that the intellectual property rights of

Monsanto are taken more seriously by the government than the human “right to food” (provided for in the Kenyan Constitution). Despite its moral ambitions, the WEMA project’s greatest success is in helping to privatize agricultural research in Kenya, not in addressing the plight of the poor.

CHAPTER 5

SEEDS AND SUBJECTS

“People say that this partnership [WEMA] is to push Monsanto’s agenda, but when you are in the partnership, your mind is not thinking that.”

- *Monsanto Corporate Affairs Lead, East Africa*

The last chapter explored processes of enclosure, as Monsanto expands its biotech seed markets into Africa via philanthropic partnerships – but what are the “minds” in the WEMA partnership actually thinking, if not to push Monsanto’s agenda? According to the Monsanto representative quoted above, the WEMA project has “a philanthropic agenda” that is led by the Gates Foundation: “It is good. It is about health, agriculture, and education.” Narratives of appropriation and dispossession are at odds with the humanitarian impulses of WEMA partners in this context. One way of investigating this tension is through the interaction between forms of power and the formation of individual subjects. What people say and what they do, what they think and how these ideas function in the world, are not always aligned, or even coherent. Subject identity is continuously created and performed in different ways and in different spaces. Discourse is recognized, mobilized, ignored, and produced by and through practice. This happens in institutions, but also in practices of the self (Althusser 2014, Foucault 1988).

Focusing on discourses of identity that provide the terrain on and through which subjects are created and maintained, this chapter investigates the subjectivating effects that economic connectivity produces in the WEMA context, linking the production of GM crops to the production of class difference. Rather than seeing the development of GM crops as something

driven by hunger or science, this chapter argues that biotech researchers in Kenya can be understood as performing a middle class identity of care. Many of them come from backgrounds in which hunger and poverty are motivating factors for their interest in crop biotechnology, typically framed as a desire to achieve “food security” for rural populations. This desire connects with a middle class performance of scientific expertise derived from a moral humanitarianism and dependent on a discourse of the poor other. This chapter details how what people are *thinking* and what they are *practicing* can be in tension in the context of agricultural development.

I begin by situating poverty as a key site for the making of middle-class actors as normative subjects, produced in relation to a poor other. I then consider Judith Butler’s (1997b) extension of Foucault’s concept of subjectivation to think through the discourses and performances of Kenyan scientists and development practitioners as both middle class and humanitarian. I attempt to go beyond pre-defined class and identity groupings to discuss what it means to always be in the process of becoming a subject. I then detail what development subjectivities are necessary to the dissemination of GM crops in Africa and how these subjectivities manifest in the WEMA project. I conclude with ideas about why technological innovation, as opposed to politics, is the response to modernity in the WEMA context, arguing that technological subjectivities are a rational response to the class anxiety created by market-based violence. Also, following Butler, I suggest that these subjectivities, representative of the *intolerable present* (Foucault, cited in Youdell 2006) must be disrupted by other performative strategies if “the poor” are to ever become “not poor.”

“The poor are us”

The poor are conventionally thought of as a group of people who require help due to a perceived lack – of resources, of good governance, of individual skills, etc. But geographers (and others) have argued for a relational worldview that implicates the non-poor in the production of poverty under global capitalism (Hart 2002, Gidwani 2002, and scholars affiliated with the Relational Poverty Network convened by Sarah Elwood and Victoria Lawson).¹ They have even suggested that poverty is the result of an *excess*, rather than a lack, of connection with the West (Sidaway 2003). Lawson et al. (2015) situate the middle class in this endeavor, arguing that poverty is “a key site for the making of middle-class actors as individualized, aspirational, normative subjects” through their interactions with poor others (p. 1873). They examine how middle-class actors frame themselves in relation to the poor and how these framing are expressed in “poverty politics” – the ideas, discourses, and actions of social groups in response to poverty. Challenging the neoliberal framing of the middle-class as successful, and the poor as flawed and in need of improvement, they stress how deeply implicated the non-poor are in the production and transformation of poverty – primarily through “their roles in legitimating political-economic and social relations of difference” (Lawson et al. 2015, p. 1874).

Importantly, Lawson et al. (2015) and others writing within relational poverty frameworks do not theorize the middle class as a fixed entity, but as “a material position, a social imaginary, and a strategy of governance” always shifting and, though dominantly understood as a White, Euro-descended national identity, differently conceived in different places (p. 1875). They trace how framings of idealized modern subjects (autonomous, entrepreneurial, freedom loving) are also always framings of class subjects, and ask what the possibility is for reframing

¹ <http://depts.washington.edu/relpov/who-we-are/>

middle class subjects as “social beings” rather than competitive individuals, especially in places other than the US (Ibid). In other words, they investigate the *grounded expressions* of the making of middle class identities in relation to poverty (Ibid, p. 1877). This chapter does the same in the context of the WEMA project, with an eye toward alternative views of the relationship between individuals and collectives in poverty governance. It identifies narratives of GM crops that frame who is poor, why, and what should be done. In so doing, it traces a discursive process, illustrating how middle class Kenyans: 1) see themselves as normative individuals, 2) engage in boundary making, and 3) rationalize the development of GM crops as their own poverty politics.

Though Lawson, Elwood, and others (2014, 2015) are discussing middle class poverty politics in the context of the US recovery from neoliberal crisis, there is much literature that discusses similar processes of class and identity formation in the context of international development. Ballard (2012), for example, notes the privileged status of the global South’s middle class in a variety of development narratives. Development practitioners praise the advancement of those groups who have been able to consolidate development “wins” and embody society at its most functional – meaning, under conditions of “good governance and democracy” – as responsible, self-sufficient citizens (Ballard 2012, p. 566). The perceived virtue of the middle class comes from its ability to consume, which validates increased market interactions as development, even though these abilities are most often the result of prior privilege/wealth, and not market effectiveness. But the benefits to these groups do not automatically translate into benefits for the poor. While economic relations are important to understanding middle class identity, so is a broader understanding of what being and becoming middle class can mean. The “cultural turn” in the social sciences reflected this acknowledgement – and prompted a shift in thinking about social groups as primarily struggling for “the freedom to

have” (determined by economic production processes) toward a more identify-based politics struggling for “the freedom to be” (Wolford, quoting Melucci 1989).² Recent scholarship on the definitions of and roles for an “African middle class” in relation to poverty and development takes up this tension as well (Spronk 2014, Melber 2017, Werbner 2017).³ This does not remove the need to analyze material processes of development, but it does open up traditionally Marxist development critiques to those based on other, multiple forms of governance.

Many of these critiques are inspired by postcolonial framings of self-governance. Gupta (1998), for example, sees “the postcolonial condition” – the feeling of being “backwards” or “behind the West” – as an identity of underdevelopment, always articulated with identities of race, class, and gender, among others. Wainwright (2008) delves into the nationalistic tendencies of the postcolonial condition to argue that the Maya farm system (analogous to the “smallholder farmer” narrative in Africa) in what is now called Belize was “made to be developed” (p. 88). His work shows that the Maya farm system was manufactured by Western discourse to provide an object of intervention under the pretense of “saving civilization” (what we might also call humanitarianism). Nally and Taylor (2015) argue, similarly, for seeing agricultural development as social governance rather than a technical project, particularly in the context of modern philanthropy. To them, the history of philanthropic intervention in smallholder farming has meant that “the longstanding goal of putting the peasant in the market was supplemented by the new, more radical aim of putting the market in the peasant” (2015, p. 53). They suggest that philanthropy is still interested in the “modernization of the peasant’s mind” (meaning, the

² Bourdieu (1986, 1987) did a lot of this work – on class as taste, on social capital, etc. – and is the theoretical starting point for much of Lawson and Elwood’s research.

³ It should be noted that these works are not engaging new phenomena (Resnick 2015), rather they indicate a resurgence of class-based analyses in Africa following in the tradition of Marxist scholars such as Frantz Fanon and Amilcar Cabral, and articulating with work on class identity from E.P. Thompson and Pierre Bourdieu.

conversion to risk-accepting entrepreneur) through a psycho-social regulation based on market principles (2015, p. 61). This manifests in the promotion of “self-help” narratives as the means for social autonomy (i.e. escape from poverty). Self-help then becomes the strategic mode of investment for philanthropies looking to integrate market mechanisms further into rural populations. So, while this chapter is based on the premise that class differentiation is a primary outcome/strategy of philanthrocapitalism, it proceeds from the view that class is a process, not a product, always being made in practice and through an articulation with other identities.

It matters, too, that the middle class has historically been theorized as a “contented majority” (Galbraith 1992) – a “hegemonic political fiction” positioned in between the extremes of social space, with rich corporations on one side and poor farmers on the other (Elwood et al. 2015, p. 125). The literature notes that association with consumer culture, national identity, and neoliberal rationalities serve to depoliticize the middle class, manufacturing consent for a predominately white, American normativity (Ibid, p. 124). The project is not just to identify the ways in which middle classness helps depoliticize poverty, rendering it individualized or exceptional, but also to look for ways in which these discourses are challenged or contested. As we will see, there is evidence that becoming middle class through the WEMA project can lead to something other than boundary making and exclusion.

Subjects, subjectivity, and subjectivation

The literature on subject formation and identity in the development context is inspired by Foucault’s writings on the rationalities and technologies of self-governance (Foucault 1978, 1980, 1988, 1990). In his genealogy of development aid in Australia, Paul Hodge (2014), taking up Foucault’s concept of subjectivation, describes practices of subject formation as a *governed*

freedom, defined as “a kind of freedom that is highly technical and governing in its trajectory and prescriptive in its fashioning of desirable subjects” (p. 293). Hodge argues that this mode of governance is operationalized in relationship to perceived deficiencies in a population, as “the moral function of fear that it embodies” (Ibid). He describes international development as a very narrow story, with narrow versions of freedom to offer, and stresses how strange, and “seductive,” the justifications are for the “will to improve” (Ibid, Li 2007). His response to these forms of power (following Walters 2012) is to “defamiliarize the intellectual and political landscapes that (hegemonic) thought acts upon,” attempting to open up space for new worlds of thought to be imagined (Hodge 2014, p. 292). In this vein, and with a focus on how thought *does things* (Walters 2012, Gibson Graham 2008), this chapter examines the material effects of the rationalities and technologies of governance that create subjectivities through the WEMA project. This requires acknowledging the performative roles that narratives play in development practice.

Judith Butler has explored this relationship between power and subjectivities, arguing that subjectivation is both a power exerted on a subject and a power assumed by the subject – power both *dominates* and *activates* (Butler 1997b, 2004). So, while subjects are controlled through the positive power of discourse (Foucault 1990), they are also making themselves through these processes. Butler finds possibility in performative subjects to unsettle hegemonic meanings, replacing sovereign agency with “discursive agency” – the capacity to name, and thus constitute, subjects (Butler 1997a). In this framing, a poor person “is” because they are designated as such by the development community. It is the very act of designation that constitutes these subjects. The political challenge is to intercept these subjectivating processes in order to constitute “the poor” again differently (Youdell 2006, p. 519).

Why would this matter in a country like Kenya? Do the poor not suffer the “real,” material consequences of hunger and poverty that demand development as a humanitarian intervention?⁴ They do. But why they do so is more complicated than attributing hunger to problems with pests and disease in maize fields. As described by Mamdani (1996), the citizen/subject divide (the basis for colonial control in African states) was institutionally reinforced through an urban/rural politics that played customary (“tribal”) and colonial (“civil society”) sectors against one another. The result was reform for some, repression for others. In other words, uneven citizenship. In the WEMA case, we can see these identities being played out not only at the institutional level, but also in terms of individual subject formation. Without addressing this unevenness, technical solutions to crop yields will never produce the kinds of solutions to poverty promised by the biotech community. But the same processes of subjectivation that reinforce unevenness hold the potential to transform technical subjects into political ones. Discursive agency represents complex possibilities for Kenyan citizens.

Green Revolution subjects

As calls for the market integration of smallholder farmers become louder with the rise of “new” Green Revolution narratives and “new” philanthropy, the history of unevenness in capitalist agriculture should remain front and center. It is worth paying attention here to the misremembered history of the Green Revolution (GR) in terms of both state support and target populations. Raj Patel (2013) has detailed the myths of GR narratives that ignore the primary role played by states (alongside the World Bank) in supporting the dissemination of agricultural technologies. Without state subsidies of infrastructure and credit, there would have been no

⁴ “We cannot not desire development” (Wainwright 2008, p. 10, following Spivak).

Green Revolution in SE Asia. The GR technologies were not “beyond the ken” of African Ministries of Agriculture, rather, the government subsidies were beyond the budgets of African governments (Ibid, p. 33). And in terms of control, the Rockefeller Foundation was in charge from the beginning, advancing a US geopolitical agenda. As Patel (2013) also points out, most accounts of the Green Revolution erase the anti-communist, pro-US-state intentions of the Foundation in Mexico in favor of a poor farmer narrative (p. 38):

There was never a suggestion of a compact between small-scale farmers and philanthropists at the outset of the Green Revolution. The goal, tiresome though it is to restate, was the management of class tensions through an increase in the food supply and the management of this food supply to suppress urban hunger.

Patel is correspondingly critical of new efforts to promote GR narratives in Africa. He criticizes the Gates Foundation advocacy for *creative capitalism* – what Patel sees as the legitimization of the process of accumulation by dispossession – in expanding industrial seed systems and technologies into Africa, and argues that, “In the absence of the war on communism, the main legitimization for the new Green Revolution is humanitarian, and explicitly, pro-smallholder” (2013, p. 41). Claiming that smallholder farmers should guide the “new” GR when the agenda has already been written requires cognitive dissonance on the part of philanthropic narratives. Farmer organizations do exist, and have for some time. They also have multiple and varied interests, including ones that explicitly reject GM crops as part of their farming models.⁵ Following Patel, this chapter starts from the proposition that thinking about alternatives to agricultural systems centered on capital accumulation requires questioning “the extent to which peasant groups are able to attain relative autonomy from the forces of state, private sector, and civil society that have shaped the latter part of the Long Green Revolution” (2013, p. 50).

⁵ La Via Campesina is an international peasants’ movement and coalition of over 150 organizations dedicated to fighting for food sovereignty: <https://viacampesina.org/en/international-peasants-voice/>

So, who is the smallholder farmer in this context? A needy recipient of improved technologies? A component of political support for government elites? Or, the necessary target of intervention for capital? The inclusion of “smallholders” in the World Bank’s 1973 credit scheme was a direct response to the critique that the GR only benefited large-scale farmers (Patel 2013, p. 32). Though this scheme did not survive the financial troubles of the 1970s, from then on, the discursive target of agricultural development in Africa has been the poor, smallholder farmer.⁶ Ideas have not changed much since 1973, as modern day Green Revolutionaries like Bill Gates (2009) still prioritize the inclusion of smallholder farmers into circuits of capital (quoted in Patel 2013, p. 38):

The next Green Revolution has to be greener than the first. It must be guided by smallholder farmers, adapted to local circumstances, and sustainable for the economy and the environment. Let me repeat that. The next Green Revolution must be guided by smallholder farmers, adapted to local circumstances, and sustainable for the economy and the environment.

At first glance, it appears that Gates is saying smallholder farmers should be involved in making decisions about how the Green Revolution should proceed. But the WEMA project shows us that in practice this is not the case. In saying this, and repeating it, with outcomes that prove the opposite, what Gates is doing is reaffirming a discursive target (the smallholder farmer) that justifies narratives of interventionist, industrial agriculture. He is saying that decisions should be made *based on* the smallholder farmer as a target, not *by* the smallholder farmer as a participant.

The target of development (in crisis)

One of the primary requirements of highly technical development narratives is a constant threat of crisis. Though these crises (hunger, poverty, climate change) are often crises of

⁶ Unfortunately, this discourse is not sufficiently broad or differentiated enough to focus on asset ownership, a necessary component for small-scale farmers interested in capitalist processes such as growth or accumulation.

capitalism, development narratives position them as problems of security to be solved via market integration. As Hodge (2014, p. 299) notes:

The threat of poverty aims to align certain sensibilities with a range of ‘educated anxieties’ (Rose 1999) about the future. The purpose is to stimulate ‘a consciousness of economic risks and uncertainties that accompany...socially expected entrepreneurship’ (Lemke 2012, p. 49).

In other words, people must be conditioned to accept the risks that capitalism produces (i.e. hunger) before market-based solutions can be offered. One way this is accomplished in the context of GM crops is through discourses of immediacy, often contrasted to alternative production models that require years to achieve production goals.⁷

When questioned about the role GM crops could play in addressing issues of hunger and poverty in Kenya, university researchers in Nairobi invoked the threat of death. A Senior Research Fellow in Agricultural Biotechnology at the University of Nairobi did not contest the efficacy of agroecological models of food production, rather he stressed the temporal nature of the crisis:⁸

We have people who are starving even as we talk today. Those models are good, but they will take time. At the moment, as we talk now, we cannot let people die as we follow a model. We have to produce food quickly.

This narrative does not question why people are currently starving, or how that might be related to industrial production models or poverty more broadly. Rather, it posits alternative production models as inadequate to address what is perceived as an imminent threat. This focus on immediacy can also be seen in the critique of biosafety legislation (or lack thereof) to facilitate the commercialization of GM crops. A Senior Lecturer in the Department of Biochemistry and Biotechnology at Kenyatta University argued that preventing permissive policy is akin to killing

⁷ “Agroecology” is increasingly being put forth as a sustainable political/ecological alternative to industrial agriculture in Africa. See: Pretty (2006) and AFSA (2016)

⁸ Interview at the UoN science campus (7.28.15)

the poor: “Yeah, but we have GM crops already developed. Why should people wait for me to work out in my lab as they die? Why can’t they eat what is available already?”⁹

These statements suggest a linear (and fast moving) relationship between using GM seeds, producing more food, and saving people’s lives. Yet, the link between increased food production and decreased starvation is not straightforward.¹⁰ “Rising out of poverty” via increased market connection (in this case, improved seeds) is perhaps possible, but it is not the historic norm for smallholder farmers. What such statements do is outline a pre-determined mode of action (promote GM crops) for a range of immediate and provocative threats: adaptation to climate change, increasing drought, loss of trade, increased jihadism linked to hungry populations, and loss of regional influence, to name a few.¹¹ These threats are complex, and require changes in governance, not just production techniques. In legitimizing crop biotechnology through these narratives, the WEMA/humanitarian model advocated for by donors like the Gates Foundation becomes the dominant frame for thinking through poverty. The sense of vulnerability produced through these discourses guides conduct toward a self-diagnosis of the problem (hunger) and solution (GM crops).

So, who are these poor, starving people? An unchallenged discourse in the WEMA project in regards to smallholder farmers is that subsistence farming is inadequate for securing livelihoods in Kenya.¹² This inadequacy is necessary to frame smallholder farmers as a market for technological intervention, and this market is necessary for corporations who find themselves

⁹ Interview at Kenyatta University (7.15.15)

¹⁰ It additionally requires investigating political commitments and class issues. For nuanced analyses of the relationship between technology and poverty in the context of the Green Revolution, see: Das (2002) and Freebairn (1995). For why GM technology is not likely to work the same way in Africa, see: Fisher (2016).

¹¹ Compiled from three separate interviews with WEMA partners at the AATF, Kenyatta University, and University of Nairobi.

¹² Though challenged in critical literature that supports food sovereignty and agroecology. See: Altieri (2012), Altieri et al. (1998), Holt-Giménez and Altieri (2012).

dealing with profit crises. According to Monsanto representatives, without smallholder farmers “there is no business in Africa.”¹³ This statement reflects two necessities for “business.” One, the Green Revolution in SE Asia was successful in targeting medium to large-scale farmers who planted large areas with one varietal. Monsanto would benefit greatly by doing the same thing in Africa, but the critiques of the Green Revolution (its lack of attention to small farmers) make this difficult.¹⁴ Instead, Monsanto must seek profit through many individual seed buyers, who Paul Collier (2007) labels the “bottom billion,” those masses of poor people who lack the ability to purchase but hold great potential. Two, in order to reach this market, they need a moral obligation to sell a product that will help the poor. WEMA cannot exist without both justifications. Addressing large and “immediate” crises of capitalism in this context requires an *other* to target, and it requires many of them to make it profitable.

Curiously, though smallholder farmers are framed as unproductive and lacking modern methods, they are at the same time considered smart, rational decision-makers. The WEMA Project Manager began our conversation with the following statement:

It is hard to convince people that African farmers can be shifted out of poverty. People think that poverty makes you not even think. You just react. We are talking about a seed technology. Is the small-scale farmer stupid? Can they not determine what is good for themselves? The ‘anti’s [*groups who contest GM crops*] see this as enslavement. But a farmer will pick a seed based on its use and only keep using it if it produces well.

This statement illustrates a main tension in farmer identity as defined by WEMA partners. Farmers are not stupid, but they are unproductive. This must be because they do not have access to markets and technologies.¹⁵ But if farmers will pick a seed based solely on its use, then it matters how they get the seed, from whom, and with what implications, primarily because they

¹³ Interview at Monsanto’s Nairobi headquarters, with Corporate Affairs Lead (6.16.15)

¹⁴ As do climate and land characteristics. Calls for a “uniquely African Green Revolution” focus on the development of improved seeds and seed systems, but very rarely address who actually benefits (Scoones and Thompson 2011).

¹⁵ <https://www.gatesfoundation.org/What-We-Do/Global-Development/Agricultural-Development>
Also: Bill Gates address at 2009 World Food Prize symposium (Des Moines, IO).

have no input in seed production, nor any experience with GM crops. Without publically available data showing significant yield increases, they only have the risk involved in testing innovative technologies (new seeds) from corporate partners. They are assuming risk that would otherwise fall onto large-scale capitalist ventures or the government (through KALRO).

The idea that the poor should have a choice in how they produce food is not apparent in WEMA narratives. Though the Gates Foundation does say on its website that “listening to farmers and addressing their specific needs” is part of their strategy, plant breeders involved with the project have different views. When questioned about farmers having control over their production methods, or a choice as to what seeds they plant, a Senior Research Fellow at UoN responded, “The poor cannot have what you call sovereignty. Because the poor just need food. They don’t have many stories. And they wouldn’t want to care about so many of these things.”¹⁶ This is in direct contrast to the above statement from the WEMA Project Manager, and to peasant realities across the globe. The literature on food sovereignty has challenged the narrative of smallholder farmers as unproductive as well as the idea that they are uninterested in “larger” narratives of sustainability or autonomy (Rosset 1999, Altieri and Toledo 2011, Altieri 2012). It has also demonstrated why GM seeds are not a solution to poverty (Rosset 2005). What it argues instead is that smallholder farmers have been productive *despite* the sustained violence of colonial, state, and market rule. That their production systems have helped them survive on marginalized land without any subsidy, while withstanding decades of political neglect and/or oppression. The WEMA project both uses and rejects the idea of choice or autonomy, requiring only the narrative of the poor, hungry farmer in need to promote its GM seeds.

¹⁶ Interview at University of Nairobi (7.28.15)

Becoming technological

The fear of poverty, of being left behind, and of inhabiting “the postcolonial condition” is fundamental to identity within the biotech community in Kenya. The primary discourse that motivates the researchers I spoke to who work in WEMA-related fields (at Kenyan universities, at the NBA, and at Monsanto) is food security. Many of them grew up on subsistence farms in rural Kenya and use this as their justification for searching for new technologies and improved farming models.¹⁷ They associate job and crop losses primarily with inefficient production, though further discussion prompted an acknowledgment of additional constraints (like competition on a global market and the defunding of agriculture extension). The connection is made clear – better technologies equal better livelihoods. A Senior Lecturer at Kenyatta University described his childhood experiences:¹⁸

As I grew up, I realized that we were unable...that all of our ginneries and our cotton and textile industry were all closed down. [I was] realizing that was where most of our uncles, brothers, and parents were employed. So we lost our jobs. First of all, because cotton could not grow ably in the environment. So, I've seen a situation whereby production constraints, like the insects, can affect lifestyles. So, I am very passionate about Bt cotton because of where I grew up.

Rather than question why cotton was grown by smallholder farmers in this marginalized and arid region of Kenya, or look to the social context of why the cotton industry failed (the cotton industry thrived in the 1970s and 1980s, but fell victim to structural adjustment policies in the 1990s),¹⁹ this narrative suggests that pests and other production constraints destroyed an entire industry. It is not shocking that a plant breeder would identify with improved crop technology as a way to address the problem over political advocacy for a restoration of agricultural extension

¹⁷ The three interviews I pull heavily from in this section are all from researchers who grew up on subsistence farms. Their families grew commodity crops (coffee in Eastern Province, maize in Nyanza, cotton in Western) for cash, but were all reliant on subsistence farming.

¹⁸ Interview at Kenyatta University (7.15.15)

¹⁹ After the Cotton Board lost control over domestic production in 1991, and Kenyan markets were opened to global imports, previously productive Kenyan textile firms went under (Maiyo and Emo 2012)

services or the Kenyan Cotton Board. It also makes sense that someone trained in the UK while working with a global pharmaceutical corporation on classical drug discovery and patenting would advocate for innovation and entrepreneurship. How the narrative of rural poverty moves toward one of urban innovation is striking in this context.

Scientists who work in crop biotechnology do not want to become (or go back to being) farmers. They have moved out of the countryside and into the city. They have reaped the benefits of science and technology, funded by grants from donors like the Gates Foundation, Syngenta, Monsanto, and other corporate sponsors. And, in doing so, have moved knowledge production out of the field and into the lab. This geographical move has the effect of narrowing the “field” of science so much that questions of equality do not easily fit into the equation.

This discourse is apparent at many levels. The Cornell Alliance for Science (a partner of the Open Forum on Agricultural Biotechnology in Kenya and funded by the Gates Foundation), for example, seeks to “promote access to scientific innovation as a means of enhancing food security” though building networks of advocates and training partners around the world in scientific communication.²⁰ In a phone interview,²¹ the Director of the Alliance for Science said she was interested in “evidence-based” scientific research, but held a very narrow view of what “science” means. For example, when questioned about what constitutes choice for farmers in regards to mode of production (according to their website, one of the three main goals of the Alliance is for farmers to make their own choices), she indicated that environmentally damaging agricultural practices were “totally separate” from GMOs. In other words, she does not see GM technology as situated in a social setting. It is rather a universal manifestation of science that can be transferred to any context. This discourse of technology transfer is linear and placeless. It

²⁰ <http://allianceforscience.cornell.edu/mission>

²¹ (3.3.15)

reinforces colonial narratives of trusteeship and again situates farmers as recipients of life choices made by others in their best interests, not agents in their own story.

The desire to address global food insecurity is also part of a broader development narrative of giving back. Though enacting practices of care is necessary to becoming humanitarian (Ticktin 2011), the Gates Foundation provides a discourse that allows agricultural development practitioners not only to help others, but to repay a debt owed to their success under capitalism.²² Just as Bill Gates has seen the light and now wants to use his money/power for good,²³ these individuals see the potential to bring progress to the areas they are from, even as they have escaped these areas. And the ability to do so is directly attributed to the Gates Foundation. One Monsanto employee described the “spirit” of the WEMA project:

The whole thing is done in the spirit of technology transfer. To help poor farmers without bringing about the commercial aspect (*meaning the money-making aspect*). It is about affordable technology for poor farmers. The AATF is simply the broker. Smallholder farmers need to be able to access the best technology without suffering the costs. The cost is the technology fee.

In associating themselves with these narratives, partners become humanitarian. But the idea that the “cost” is only a technology fee, and not additional risk, or change to production and ownership models, is an economic narrative with little real world application. A Senior Research Fellow at the University of Nairobi described his interest this way:²⁴

What I want to do, at the end of the day, let me put it this way...my main focus is on food availability. I don't want to use the word security. Is on food availability. So, anything that contributes to that kit, to make food available to people, healthy food, that's all I care about.

²² For an explanation of the neediness of humanitarians themselves, see: Malkki (2015)

²³ Gates was once quoted as saying, “Why don't you just give up your options and join the Peace Corps?” when challenged in a meeting about the idea of writing just for Windows (as opposed to writing for the web) (McGoey 2014).

²⁴ Interview at the University of Nairobi (7.28.15)

“Availability” is also a more complex concept than narratives of productivity suggest. Growing more food does not mean that poor or hungry people necessarily receive more food. It does not mean that food will be cheaper to buy either. Focusing on “availability” as a production problem is a narrative that must be learned.

The inequality this researcher saw growing up, particularly in terms of how uneven resource allocation affected childhood development, motivated him to study hard. He wanted to be a decision-maker, someone who affected policy and actually created social change. The path that he saw to do this was scientific, not political:²⁵

You do not become a policy changer by learning politics, for example. The policies that I wanted to change are policies that feed your mouth...So, even if I shout about a certain policy, I need to understand that policy at a very functional level. And the functional level here is plant physiology, animal physiology, and farming systems. So, I wanted to solve the problem from its foundations.

The literature on scientific expertise suggests that it is foundational to state formation and legitimacy (Jasanoff 2004, Scott 1998). And, in Kenya, one does not change policy “by learning politics.” Science, therefore, becomes a way to contest misguided policies. But characterizing scientific expertise in Kenya as separate from politics is not entirely accurate. The same researcher said that his research was driven by two main things: money and publications. This is true for most scientific research (not just in Kenya), but in his case, research is 100% dependent on grants. The government pays salaries, but does not fund individual projects. The grants he described were all from US institutions: USAID, USDA, and the NSF.²⁶ While funding sources do not dictate research outcomes, the process of applying and justifying these grants does shape research trajectories. Ideas that begin as moral and just have to fit within economic and political

²⁵ Ibid.

²⁶ Interview at University of Nairobi (7.28.15)

constraints, and carry even more political weight as they produce knowledge that affects poverty governance.

If it makes sense that the Gates Foundation thinks a technical fix is good for African seed systems, it is less clear why African scientists themselves wholeheartedly support what would otherwise be seen as an extension of colonialism. The AATF, who are responsible for administering and promoting WEMA, speak about the project with a great deal of passion. This concerns members of organizations who advocate for food sovereignty. A member of Growth Partners Africa (GPA) discussed the relationship between “passion” and “technology”:²⁷

Here we are talking about the lack of transparency in the science that the WEMA project is doing, the lack of transparency the government structures that are [affiliated with] WEMA are supposed to be doing. We have blinded crusaders...that when they are speaking about their technology, they are foaming. When I listen to [them], I can never tell if [they are] a pastor or what. Because [they are] so burning up with the solution, and maybe burning up with the anger against those who try to oppose it. [They are] earning 50 times more than anybody else. [Their] position is guaranteed. The more [they are] vocal, the more reason why the powers behind all that are going to keep them.

When scientists are hired, often coming from KALRO or other government organizations, to be a part of projects funded by the Gates Foundation, they are paid significantly more. There is also the caché in working for big name organizations. As one CIMMYT scientist said, “You don’t ask questions, you just join CIMMYT.” Income and hierarchy work together. The incentive to do what one is told is greater here. And the incentive to speak one’s mind is less. This translates into a decision-making process in which Kenyan plant breeders can have their autonomy restricted.

As the member of GPA explained:²⁸

And, seemingly, they [the plant breeders] are trying to come up with a concept, although someone else has decided what the concept is. There is a semblance of “you’re involved.” But really, your points don’t matter to the overall picture.

²⁷ Interview at Hotel Luke (6.12.15)

²⁸ Interview at Hotel Luke (6.12.15)

Another motivating factor that was common across researchers was the potential to travel and/or work in the States. Some talked about their experiences in the States with stars in their eyes, not because they were impressed with the country, but because they perceived (through the level of scientific research being done as well as the state of the art laboratories and other facilities) a connection to people and science not available in Kenya. One Monsanto employee described his feelings about a trip to headquarters:²⁹

During the conference in St. Louis they took us on a tour of the facilities at Monsanto and at The Danforth Center. I was super impressed. Because I have a science background, I could easily connect with those [people and their work]. I'm so much connected to that.

Others talked about how they got to go to the US every year and shop for their friends and family back home. These perks are not unique to Kenya, or to African scientists, but they do not exist for those working in national research institutions.

One problem with this unevenness is cooptation. A GPA member described how partnerships like WEMA co-opt scientists:³⁰

You pull out the best of the brains from some of these institutions, to come and help you finish your concept. When they come here [*meaning to Gates projects*], you are pulling them from a salary scale of zero. And then you more than 50 times increase it. Wow, how is it possible that I can have a dissenting view?

He suggested that it is not desperation that drives the move toward privatization, but rather the idea of “promise.” The promise of scholarships in the US, the promise of conference weekends in exotic locales, and, of course, the promise of much higher salaries. These promises are attractive in Kenya, according to him, because they “feel good.” He knows this because he used to work for Monsanto:

How did I become co-opted to go and work at Monsanto? I tell you even the promise of a weekend get together with Monsanto people in this resort place in Egypt, just for a weekend, would make me sell my blood. Not just blood. I [would] sell my mom. That's how. It's not desperation. If someone comes in and tells you, ‘Oh, I have a few

²⁹ Interview at Monsanto headquarters, Nairobi (7.30.15)

³⁰ Interview at Hotel Luke (6.12.15)

scholarships here, and I want to give them to your people to go and study in the US,' they will move earth and mountains to meet you. And that is how the people who are in charge of policy organizations and institutions in Kenya, certainly, and in Africa, that's how they have bared themselves naked before Monsanto... You know, other than the basic salary, you have things like per diems and nights out and travel allowances. And just the whole idea...it gives you a certain class above the rest.

This was confirmed in other narratives – of getting to go to the US Ambassadors home for parties or in searching for “greener pastures” through promotions. The reason this promise feels more intense in Kenya, than, say the US, where it functions in much the same way, is that some of these researchers are coming from poverty themselves. Their parents struggle to send them to school, they work hard for a PhD, and then are sent to KALRO to wait on a grant to come through before they can put their expertise into practice. When Syngenta or Monsanto comes through with already funded projects, the move away from public research is easy. But it does come at a political cost – autonomy.

Becoming more than technological

Though the middle class has often been theorized as a “contented majority” in the Anglo-American sense (Galbraith 1992), it could be something else in postcolonial Africa. A middle class identity in Kenya articulates with geopolitical narratives contesting colonialism as much as it does national citizenship hierarchies. This provides openings for different ways of imagining citizenship and development. But even narratives that do not involve boundary making against a poor other still represent a desire to be left out of the politicized discussions of class. Performing a middle class identity is not a straightforward process. For example, many of the WEMA partners interviewed expressed a frustration with the politics of GM crops even as they argued for its benefits.

In one interview, a partner involved in policy-making at the AATF was both adamant about the need for GM crops and explicit in his desire to “do something less controversial.”³¹ When asked about plans for the future, his response was that he just wants to teach, to do a job, and live his life. A Kenyatta University scientist said much the same thing: “I just want to do my research and be happy.”³² The idea that happiness is a primary goal in life conforms to a middle class identity. As does not wanting to be political. But this also means that advocating for GM crops is not always the desired end game – equally important is alleviating the anxiety that stems from market vulnerability. Other ways of promoting connectivity and development are possible here.

Happiness (contentment) also articulates with other discourses. There are those who feel great pride in their work specifically because it positions them on the “front line” of innovation as a “pioneer” of progress.³³ Understanding “what other people cannot” (i.e. “the science”) about GM crops gives them a sense of perspective that puts them at the center of the debate, with “misinformation” and “ideology” outside of their worldview. If “the science” changes then, or a broader view of what science means comes into play, theoretically then, it is possible to imagine a shift in the terms of the discourse on progress.

OFAB, AATF, and the Alliance for Science advance narratives of “evidence-based” learning under the concept of “information sharing” (funded by Gates), but this is a direct attempt to “convince farmers that GMOs are good,” not an attempt to translate science.³⁴ Some WEMA advocates are “rabid” in their defense of the project, promoting GM crops as an obvious

³¹ (6.10.15)

³² (7.15.15)

³³ Monsanto’s Regulatory Affairs lead (7.30.15), former National Biosafety Authority Officer (7.14.15)

³⁴ Per the OFAB Director (5.28.15)

and essential solution to hunger.³⁵ This advocacy takes different forms. Many researchers have an unwavering faith in crop biotechnology born of their own scientific training and their “witness” to the miraculous results at test sites. They believe in the process of scientific research and the corresponding process of regulation set up by the National Biosafety Authority. They believe in these processes in the context of postcolonial Kenya, a country that has recently experienced violent political elections, terrorist attacks, and fighting among diverse factions of Kenyan citizens. While religious leaders protest GMOs, government corruption continues, and funding sources do not always materialize, science and law make sense to them. They feel the pull of a class-based identity expressed as scientific expertise, but they are also attracted to the potential order that “rational thought” could bring to Kenyan politics. They want the rule of law and scientific enlightenment to work for democracy in their country, with decisions based on evidence rather than “tribal” affiliation. But they are performing a class-based divide that erodes the potential for democratic politics and keeps decision-making strategies located outside of Kenya. This is how anti-political science becomes part of the colonial project.

Non-market-based subjects

It should be noted that those wary of crop biotechnology can also latch onto discourses of safety and security, instilling fear of the use of GM crops. In fact, the ban on GMOs in Kenya is almost completely framed in terms of wanting to ensure their safe consumption. They can use a narrow definition of science as well, like focusing solely on the harm to Monarch butterflies or attacking corporate control over seed systems.³⁶ But narratives from food sovereignty advocates

³⁵ As described by a member of GPA (6.12.15)

³⁶ See popular documentaries like *OMG: GMO* or *Food, Inc.*

use holistic discourses that situate crop technologies into broader social and environmental contexts.³⁷

The science behind climate adaptation is much more complex. And I think one of the problems with American corporations and Western science is that you have one discovery and it becomes applicable in almost every field. Whereas, in terms of climate stress, naturally adapted varieties are able to call upon several hundreds of genes, working in tandem, simultaneously, to do various things to make the plant extend its roots deeper to whatever the water level may be, make the stem hardier and probably shorter, make the plant open (make the breathing pores bigger or smaller), etc. There are so many genes that are working on adaptation. Instead of one solution to fight such a complex trait, climate stress, you really need what the African rural farmer is doing. And that is letting everything grow and evolve in the field (with the changing climatic conditions).

Here, the power to adapt lies within the seed, which (as explored in the previous chapter) is being enclosed for profit by Monsanto. This discourse positions African farmers as innovative and necessary, not as individuals left behind in the modernization discourse. Farmers are the guardians of the practices (breeding for improved traits and preserving biodiversity in situ, for example) that will help the world adapt to climactic variability and warmer weather.³⁸

These discourses additionally remind us that women often perform these practices. The same member continued:³⁹

The premise is that farmers and those old women that are still doing sustainable agriculture are continuing to do their magic. They are identifying superior performing germplasm on their land and on their farms. They are going to save the better open pollinated varieties for planting next season, and next season, and the season after that. It is basically giving the tools to improve food security into the hands of the women.

Farmers also put concrete solutions into practice with much less funding than biotech projects, focusing on a variety of strategies to keep soil moisture (mulching, double digging,

³⁷ Interview with GPA member (6.12.15)

³⁸ The “flooding” of the Svalbard Global Seed Vault has raised concerns about relying on preserved seeds for future food security. And experiments show that evolution works by rules that we cannot anticipate, meaning that freezing seeds/genetic material in global seed vaults and expecting them to perform the same in future climates/landscapes is not a guaranteed process. See: <http://bostonreview.net/science-nature/jack-heinemann-seed-vault-flooding-only-start-our-problems>

³⁹ Between 50-80% of agricultural labor in Africa is done by women, depending on the country (FAO). Women are also more involved in subsistence farming, as opposed to commodity/cash crops.

increasing organic material in soil, etc.) that are not only focused on seed improvement, or only addressing drought, but beneficial to broader socio-ecological systems of farming. These frameworks help identify the market as the source of economic anxiety for those involved in crop production, not the solution.

Discussion

This chapter shows that the creation/maintenance of subjects is as important as the political economic violence of the *spatial fix*. By enrolling free, empowered, entrepreneurial, deserving subjects and requiring a hierarchy among them, development projects like WEMA provide the foundation for uneven development based on class. Becoming middle class happens through an affiliation with technological and anti-political discourses that position scientists as productive and happy workers attempting to help “the bottom billion” prosper through the market. These poor subjects must make do, adapt, test Monsanto’s seeds in the “real world” and help them innovate. In other words, the WEMA project is dependent on making smallholders work for them (discursively and as a future market), while the credit for “helping” goes to those in need of help (Monsanto). What farmers learn is not to focus on making claims on the state for rights to food or control over production, but to adapt to neoliberal livelihood strategies that put them at the mercy of the market.

Deb Cowen (2014) writes about how technological change often undermines workers, showing how they lose the ability to participate in decisions about technological innovation. The question she asks, and is reproduced here is: What are the political costs of technologies and discourses of increased production? This chapter does not challenge the idea that African production systems are stressed, but it does argue that increased production cannot be the answer

if it comes at the expense of the poorest and the most vulnerable populations. As Roy (2003) has argued, the citizen subject is dependent on the private property relation, what she calls “propertied citizenship.” Only property-owning citizens can make demands on the state, and these property rights are prioritized over human or environmental rights. Smallholder farmers lack the property that might provide them with such citizenship benefits, and are further undermined by technological innovations (i.e. GM seeds) that reduce their participation in production methods. Innovation, in this context, is an anti-political discourse.

Practitioners in the WEMA project circulate narratives coming from the US, funded by US donors, and in the practice of implementing US-led projects as part of a discourse of development. But even in this context, they acknowledge that priorities for African countries and smallholder farmers are different from US corporations. They want to use crop biotechnology to develop their own capacity for improving seeds and crops. In this sense, practitioners and targets of crop biotechnology in Kenya perform the work of translating state/corporate violence through development. They have been created as both innovators (middle class) and entrepreneurs (the poor) in an effort to advance ideas of market-based poverty alleviation. The US cultural imaginary can only comprehend individualized class subjects, and what Lawson and Elwood (2014) call “a poverty politics of exclusion” (which is why many US citizens do not understand structural poverty). But are the possibilities in Kenya different? And what does it mean to conceive of an “African” or “Kenyan” scientist in this context?

Conclusion

The WEMA project provides a discursive arena that illustrates how the poor are constructed as targets, then partnered with, and finally asked to be deserving, entrepreneurial

subjects in the free market – while the technological subject is subsidized, again by the Gates Foundation. Their improvement (the poor) is measured in how readily and thoroughly they accept the market as a vehicle of “self-help.” The middle class defines itself against this poor subject, reinscribing class boundaries through political and cultural identity. Kenyan researchers and development practitioners, having been exposed to a middle class identity of care within humanitarian projects like WEMA, support crop biotechnology as a system that guarantees them financial wealth and moral superiority. These actors inherit best business and best science practices through the process of GM crop development, but they inherit with this the economic vulnerability and anxiety of the US middle class. Connection, in this sense, is helping distribute economic fear and anxiety alongside grant money.

Perhaps the Gates Foundation does really intend to work with farmers instead of using them as a market, but the discourse among WEMA partners does not suggest that this is a priority or is what happens in practice. What does happen is the disciplining of the poor as a subject of development. What farmers can learn through the WEMA project is to help themselves, pull themselves up by their bootstraps, and accept innovation in the name of modernization. But the reason that these farmers are the target of poverty work is because the alternative, addressing systems of inequality in dual/colonial governments, is outside the scope of organizations like the Gates Foundation or Monsanto. Though Kenyans know that the government needs to be involved in public service provision, they have been living with elite/colonial capture of power and resources for so long that they are conditioned to look elsewhere. And so they agree to focus on individuals, supported by external, private funding and requiring a pre-determined solution to food insecurity – the development of GM seeds. The

result of this kind of partnership is that some farmers will succeed and some will not, but it will depend on many factors other than the adoption of new seed technologies.

CHAPTER 6

THE AMERICAN DREAM IN AFRICA

I wanted to be here because Africa is on the move. Africa is one of the fastest-growing regions of the world. People are being lifted out of poverty. Incomes are up. The middle class is growing. And young people like you are harnessing technology to change the way Africa is doing business, as President Kenyatta alluded to. And that creates incredible opportunities for Africans and for the world. It means more growth and trade that creates jobs in all our countries. It's good for all of us. This continent needs to be a future hub of global growth, not just African growth.

- *Barack Obama, 2015 Global Entrepreneurship Summit (Nairobi, Kenya)*

What we see in the WEMA partnership, rather than a philanthropic project working to solve hunger and poverty, are “partners” each struggling to achieve their own ends under the uneven conditions created by global capitalism. Each group – donors, NGOs, national agricultural research organizations, corporations, and individual plant breeders – has a competing identification with ideas of economic growth and connectivity, and, thus, different strategies for achieving their unique humanitarian visions. Though they define themselves as humanitarian, each group is also vulnerable to some extent, whether it be on the global seed market (Monsanto), as part of the government budget (KALRO), or in terms of class identity (Kenyan plant breeders). Yet, even as these groups struggle to address their own precarious economic positions, they continue to rely on narratives of economic connectivity and market solutions to development challenges. They embrace Barack Obama and his call to harness technology and grow the middle class (see quote above). This chapter investigates the privatization of agricultural governance facilitated by the WEMA project, analyzing the potential for harnessing

as well as contesting projects centered on “innovative” (read: privatized) agriculture. Philanthropic foundations such as the Gates Foundation might seek to remake the Kenyan agricultural sector into their own business image (Thompson 2014), but the results are not straightforward in terms of economic connectivity. Instead, the interaction of group vulnerabilities in the WEMA partnership provides some space for rethinking colonial power relations.

Though narratives of partnership make it seem as if the well-being of smallholder farmers is the primary humanitarian concern, a closer look at the WEMA project shows that this is not the case. Farmers not only have no input into projects being developed, but GM crops are also banned in Kenya, meaning they cannot provide any benefit to farmers at present. They remain in the domain of potentiality – with all the risk that entails. There is little publically available data to support GM crops as a poverty solution in Africa, and what does exist is contested.¹ What the WEMA project does do is support the narrative of Africa as a catalyst in the global economy. It gives Monsanto new markets. It provides *the opportunity* for a growing middle class to harness technology for their own benefit. And it gives some Kenyan researchers hope that they can develop their own technologies to combat economic imperialism, defined as an unevenness that requires Kenyans to acquire organizational and scientific technologies from the West in order to be economically competitive.

This hope, exemplified in broader narratives through the embrace of Barack Obama and the “American dream” as African dream (Smith and Mutiga 2015), requires plant breeders,

¹ There is data on GM crops providing increased yields and global economic benefits, for example Smyth (2017). But this does not apply to Africa and is not linked to poverty reduction. The Burkina Faso and South Africa examples suggest that Monsanto partnerships are struggling in African contexts (Dowd-Urbe and Schnurr 2016, Glover 2007). See: Scoones (2005) on how scientific data is manipulated by the pro-GM lobby. See: McAfee (2003) on why the promises of genetic engineering remain hypothetical, especially for small-scale farmers in the global South. Also, Freese (2009).

university researchers, and advocates of crop biotechnology to submit to the logic of business and capital as well as to help create humanitarian targets to incorporate into market-based systems. This is done via the Gates Foundation, which uses its moral capital to insert itself (and its partner corporations) into decision-making processes regarding agricultural development. In this way, the appropriation of genetic material (see Chapter 1) and the privatization of scientific research and policy function as colonial instruments, allowing US interests to govern Kenyan resources indirectly through agricultural development projects.

In order to illustrate how projects of “innovative agriculture” function as governance, this chapter analyzes the multiple and overlapping processes of connectivity created by WEMA. It explores: (1) donor funding of policy and institutions, (2) the creation of smallholder farmers as global market subjects, and (3) geopolitical implications of the GMO ban – all of which stem from discourses of “alleviating poverty through market integration.” Each of these connective threads suggests distinct problems for the idea of autonomous development in postcolonial Kenya.² Even so, this chapter illustrates how economic connectivity can be both disciplining and potentially emancipatory. That these outcomes can occur at the same time and in similar spaces makes it difficult for anyone to claim that the role of GM crops in hunger alleviation is straightforward. The tensions illuminated through the WEMA project help us think through the exaggerated claims of both the success and failure of GM crops and explain why crop biotechnology continues to be promoted in a country that has banned the use of its products.

² According to Pimbert (2009), “autonomy and autonomous spaces refer to a mode of existence whereby a social group or a nation defines its own needs and limits and sets the course of its own development” (p. 1).

Outline

I begin by putting agricultural development as economic connectivity into historical context and outlining the geographic literature on the shifting forms of environmental governance under neoliberalism. I then discuss the essential role that structural adjustment programs played in cutting agricultural extension programs and other public service provision in Kenya, paving the way for privatization in the American style. I show what American-led “best business practices” looks like in Kenyan institutions as well as how these narratives justify the creation of market subjects as the neoliberal remedy to market failure. After illustrating the conflicting and contested narratives surrounding the commercialization of WEMA’s first biotech crop in Kenya, this chapter concludes with a discussion of what inclusion means in the WEMA context.

Background

Critical development scholars are wary of claiming pro-poor benefits to increased economic connectivity under globalization, specifically in terms of the incorporation of the peasant into capitalist agriculture.³ Tania Li challenges development policies that “alleviate poverty through market integration,” suggesting instead that poverty is the product of capitalist growth (Li 2007, 2014). This relatively straightforward Marxist argument about the logic of capitalism is mediated by the specifics of the stories Li tells. Her experience with Sulawesi highlanders does not suggest that capitalist relations are being imposed on people who would prefer to remain subsistence farmers, rather that most people do not anticipate the inequality that

³ For a historical example of how incorporation by the British produced famine, see: Davis (2001). However, recent geographical literature also explores development projects that are both “pro-market” and “pro-poor” (Ferguson 2010, Roy 2015).

comes with increasing economic connectivity. She argues that the poor are not necessarily interested in structural change, but in mediating their relationships with dominant groups (Li 2007). And that losing access to land is a more important issue than gaining markets (Ibid). There is no conspiracy in Li's argument. Corporations are not evil monsters trying to screw the poor, they are simply following the logic of capital.

How, then, does the logic of capital lead to colonial forms of everyday governance? More specifically, how does a philanthropic organization translate its support for privatized forms of agricultural development into a broader effort at resource governance? The Gates Foundation has committed over \$2 billion to agricultural development efforts in sub-Saharan Africa and Asia. Since 2008, the WEMA project alone has received \$85 million in Gates Foundation grants. This is direct support to the AATF for maize breeding, and does not include other grants to the AATF to “enhance knowledge-sharing and awareness on agricultural biotechnology for improved understanding and appreciation” that total at least \$15 million. It also does not include million dollar grants for “operating costs.” In November 2016, the Gates Foundation awarded another \$8.5 million grant to the AATF “to address systemic failures in maize foundation seed and ensure smallholder farmers in East and Southern Africa benefit at a large scale from the newer, better performing, climate resilient products developed through global public goods investments.” Additionally, this does not include WEMA funding that comes from Gates indirectly through other partners, like USAID and CIMMYT.⁴

The goal of the Foundation is to reduce hunger and poverty by increasing agricultural production for smallholder farmers. Their strategy includes providing access to better technologies (especially improved seeds), connecting farmers to markets, and influencing

⁴ These grants can all be found on the Gates Foundation website under “Awarded Grants” (keyword AATF): <https://www.gatesfoundation.org/How-We-Work/Quick-Links/Grants-Database#q/k=aatf>

government policy.⁵ These strategies are not new to philanthropic donors in the agricultural development industry nor to the idea of development as it was constructed in post-colonial Africa.⁶ It is an idea that requires two main components: subjects in need of care and a modernization narrative that prioritizes technical assistance from “the West.” This narrative (as it relates to food security) is part of the single most dominant story told by the agricultural development community – the success of the Green Revolution in alleviating hunger in SE Asia. What has changed from the 1960s is that instead of constructing subjects as recipients of humanitarian aid and technical assistance, the “poor and poor other” are now framed as partners in the global project of poverty alleviation. What remains the same is that the risk involved in expanding global capitalism still falls on the poor. If, under global capitalism, the rich and poor are now partners in addressing issues of poverty and hunger, how can we categorize the assumption of risk as the Gates Foundation places “big bets” on technological innovation and governance via market relationships?

Regulation of African agriculture

Narratives about “Africa” as a peripheral actor in the globalization process were popular post-independence, as world systems theory (Wallerstein 1976) was used to describe Cold War geographies. In this framing, African countries provided resources to the centers of the world economy that drove production and consumption. Though Wallerstein was trying to describe an uneven world system and think about possibilities for changing it, the language of core and

⁵ <http://www.gatesfoundation.org/What-We-Do/Global-Development/Agricultural-Development>

⁶ See: Arowosegbe (2016) for a discussion of developmentalism as the defining discourse of the late colonial state in Africa from the 1940s onwards. In terms of international agricultural development, this can be seen in the large resources put toward the development of African cereal staples by the Consultative Group on International Agricultural Research (CGIAR), begun in 1971 by the Rockefeller Foundation.

periphery also gave discursive power to imaginaries of “backwards” and “dark” Africa. In this scenario, African farmers need Western technologies to properly develop their agricultural sectors. This narrative ignores the long and relational history of agriculture as a global process. It positions Western-trained plant breeders and geneticists as the innovators, and African farmers as recipients of agricultural knowledge and material. Carney (2001, and with Rosomoff 2009), has shown this to be historically untrue, arguing that both African labor and plant genetic material were essential to the development of the Americas, reversing the modernization narrative of technology transfer. While critical studies of modernization narratives abound in the social science literature (Scott 1998, Ferguson 2006), technology transfer remains a dominant discourse among investors in agricultural development (World Bank 2008). Calling the WEMA project a partnership in this context makes it possible to ignore the history of development in Africa as natural resource extraction as well as elide colonial discourses of otherness (i.e. the West and the rest) under the guise of economic connectivity.

Geographers have written extensively about the relationship between the state, capital, and modernity, most importantly placing nature within this debate. Some of these literatures, including those of the food regime (Friedmann 1987, Friedmann and McMichael 1989, McMichael 2009) and “neoliberal natures” (Bakker 2010, Heynen et al. 2007), are based in post-Fordist regulation theory. Regulation theorists have noted that the state, operating at multiple scales, remains essential to balancing regimes of capital accumulation with modes of social regulation (Peck and Tickell 2002, Jessop 2008). But, in recognition that the “pie cannot grow indefinitely,” scholars writing about the nature of neoliberalism have argued that this state/capital relationship is an “environmental project” and “that it is necessarily so” (McCarthy & Prudham 2004).

The “neoliberal natures” literature pulls not only from regulation theory but also from governmentality theory to argue that environmental governance is “the regulation of biopower,” or “the nation-state’s project of securing hegemony by regulating ecological relations within its territory so as to assure the stability of capitalist relations of power and accumulation” (Robertson 2004, p. 362). This is what East African nations are in the process of doing right now by creating National Biosafety Bills.⁷ While ostensibly to protect citizens and the environment in the absence of scientific consensus surrounding the harmful effects of GMOs, creating regulatory frameworks also sets the stage for future incorporation of biotechnology into agriculture. The creation of national biosafety legislation is beneficial for transnational capital in this case, as it increases the predictability of trade regulation and limits opposition of GMOs to the technical sphere (Newell 2003, Andrée 2005). This literature lends support to Otero’s (2012) claim that biotechnology is the “chief technological form that continues and enhances the modern agricultural paradigm” (p. 284). In this formulation, we can see biotechnology as *the* neoliberal technology, changing both technologies of governance (patenting and regulating life as seed) and of accumulation (seeking “spatial fixes” (Harvey 1982) at the molecular level).

This literature not only pays specific attention to nature as an integral part of economic restructuring, but it also pays attention to practice, giving us a framework of understanding in which both technologies of self and of power shape subjectivities (Foucault 2004). Agriculture, in particular, is subject to many of what Brenner and Theodore (2002) term “actually existing neoliberalisms” - the privatization of land rights, devolution of state functions to non-governmental agencies (NGOs), and use of trade agreements to homogenize regulatory environments and promote market-based hunger solutions. These processes necessarily imagine

⁷ Uganda passed its Biosafety Bill in October 2017, Tanzania relaxed legislation in 2016 to allow for confined field trials.

and legitimate particular social orders (McCarthy and Prudham 2004). Robertson (2004) suggests that the commodification of ecological relations is a “never-concluded project of disciplining both ecosystemic relations and people as consumers of these relations” (p. 362). In thinking about genetic engineering as an “environmental neoliberalism,” this literature would have us explore the *work* that GMOs do in creating and stabilizing new spaces and subjects for capitalist activity (Robertson 2004). The trick, according to Castree (2008), is to explore contingent processes but not shy away from attempting to identify underlying “logics” that might shape a subject or outcome. This includes asking why it is rational for state institutions to partner with corporations to produce a particular type of nature, and how philanthropies facilitate this process.

Mansfield (2007) points out that it is necessary to consider the disciplinary dimensions of privatization as well, not simply how the technical and organizational potentiality of capital can be reconfigured, expanded, and multiplied through biotechnology. This question of the potentiality of life under capitalism has been taken up by Nikolas Rose (2001) in an attempt to explain how the “molecularization of life” has made our biological existence political. Rose (2001) argues that contemporary biopolitics has become a *molecular* politics based on the political rationality of risk, but moving away from a national concern with healthy populations and toward an economic and moral concern (ethopolitics) based on individual responsibility. The result is that the state is no longer expected to resolve society’s needs, but to act as the enabler, facilitator, and animator for individual citizens to secure their own well-being (Rose 2001). At the intersection of the “molecularization of life” and the “individualization of risk,” Rose sees possibilities for new forms of governance, most importantly involving the creation of new social

identities (Braun 2011). He concludes that it is “life itself” and not just our conduct that has become subject to what Foucault called the “technologies of the self” (Rose 2001, p. 17).

Agricultural systems are good sites to study the privatization of life not only because of the biophysical nature of food production and the intensity of the privatization of agricultural governance, but also because of the contradictions that they highlight and the resistance to neoliberal policy that they engender. As Guthman (2008) insists, it is specifically the indeterminacy of neoliberalism that provides for a “politics of the possible” (p. 1181). When we conceptualize it as a political economic process, neoliberalism limits the conceivable by constraining arguments, funds, scales of action, etc. When we think of it as a mode of governmentality (per Foucault), we see how it constructs subjectivities. The point is that the neoliberal discourse is not the same thing as outcomes of “actually existing neoliberalisms” shaped by state and market policies. Which is why the geographical literature calls for analyses of *neoliberalizations*, the inherently impure and hybrid articulations of neoliberalism, to unpack the relationship between ideology, regulatory reform, and everyday practice (Peck and Tickell 2002).

Remaking the state

Structural Adjustment Policies (SAPs) of the 1980s and 1990s eviscerated public funding for agriculture (and many other state functions) in Kenya and beyond.⁸ Extension systems were heavily cut, and public funding for basic science disappeared. At KARI (the former name of

⁸ In the first decade after independence (1965-75) Kenya spent an average of 10 percent of its total budget on agriculture. In the following decades this spending declined dramatically, going from an average of 7.5 percent in the period from 1980-1989, to just 3 percent in the 1990-2000 period. More recently, agricultural spending has varied between 3.5 percent (2000-2005) and 4 percent (2006-2012). (Akroyd and Smith 2007). See also: <http://www.fao.org/3/a-i3513e.pdf>. These levels of agricultural spending are low compared to other African countries, and significantly lower than the targeted 10 percent required by the Maputo Declaration.

Kenya's national agricultural research organization) this forced plant breeders and scientists to seek funding from other sources, including writing grants and partnering with private industry. One of the ways researchers could secure funding was through testing new products for corporations, such as Syngenta, who were searching for new pesticides to market.⁹ Initially, this is how KARI and Syngenta became partners, using Kenyan land and crops to test chemicals. This partnership became the basis for the Insect Resistant Maize for Africa project (WEMA's predecessor). Basic research became too expensive for the government to support without tax revenues from tariffs, which were eliminated during the privatization process. Kenya turned out to be a "classic case" of structural adjustment, in which food production dipped at the same time that public funding for maize breeding was cut, resulting in increases in hunger.¹⁰ The solution was for Kenya to partner with transnational corporations to finance agricultural development.

The tendency toward privatization has become normalized in Kenya, and the number of private partnerships in the development community has increased drastically post SAPs. It is now at a stage where donor financing of the national budget is commonplace, and deficit solutions are no longer tied to tax revenues. A recent poll found that 35% of the Kenyan public thinks that the deficit should be made up for by borrowing from donors, 17% think that funding should come from foreign investors/public private partnerships, and 12% believe Kenyans should invest themselves (Wahito 2016). The acceptance of private investment as a funding strategy builds upon years of relying on formal aid, or ODA (Official Development Assistance), from donors (IMF and World Bank) to structure national budgets. Structural adjustment loans

⁹ Interview with member of Growth Partners Africa (6.12.15)

¹⁰ (Ibid.) There is intense debate over how the SAPs affected poverty in Africa, see: Easterly (2001), Heidhues et al. (2004), and Heidhues and Obare (2011) for nuanced views on the adverse effects. For the negative effects on Kenyan society: Rono (2002). This is contrasted to Dollar and Kraay's (2002) iconic argument that growth is good for the poor.

were a type of ODA intended to support institutional reform and improve overall economic policy in Least Developed Countries. The conditions of these loans were the privatization of state-owned markets and reforms aimed at better governance. Thus, Kenyans are used to investment coming with strings attached.¹¹

In this environment, Bill Gates has proposed a new vision for financing development – that donor support be tied to the “expertise conditionality.” This is a reference to the aid conditionalities imposed by the World Bank in the 1980s and 1990s as part of structural adjustment. It is remarkable that Gates has chosen to resurrect the language of the Washington Consensus when discussing African poverty, as the one agreed upon outcome of this aid strategy was its failure to help the poor (Kanbur 2000). At a World Bank panel last April, Gates laid out the “game changers” for future development financing (Martin-Prevel 2016): First, he indicated that donor support must be continuous. Second, he asserted that development requires new tools (such as seeds). And third, “and perhaps most powerful,” he argued that the development community’s technical expertise should be used to help select and adopt best practices around agriculture (and other areas), stating: “How we use the expertise conditionality to drive the adoption of best practices faster is a big question for us.”¹² In other words, during a panel on development *financing*, Gates emphasized that technological innovation coming from a global community of technical experts (“us”) is a required component of agricultural development. He also expressed the idea that holding this type of technical expertise over the head of countries which have not shown sufficient advancement in development is the best way to get new technologies and products into new markets. The definition of “development” for the Gates

¹¹ Though it should be noted that Kenya reused to implement many of the reforms even after accepting loans.

¹² World Bank Spring Meeting. (2016). “A New Vision for Financing Development with Bill Gates.” Washington, DC.

Foundation is straightforward – faster adoption of best business and science practices coming from “the West.”

In Kenya, agricultural experts already know that the private sector drives research. The Director of OFAB Kenya (the Open Forum on Agricultural Technology) praised the benefits of private investment in agriculture, but also noted the drawbacks. For example, he acknowledged the tendency for private funding to focus on commercial crops, while public funding supported orphan crops. He additionally stated the need for government financing in order to improve seeds for traditional African vegetable crops (USAID does this in Kenya). In terms of helping poor farmers, he indicated that the government plays a large role as well: “When you leave it completely to the private sector, prices might go beyond the reach of smallholder farmers.”¹³

If the government is such an essential part of supporting research into the types of crops and the methods of farming that would benefit the rural poor, why does the narrative of private investment as a solution to poverty still hold so much power? When asked why KARI had to go to the private sector to fund its biotechnology program, the head of KALRO’s Biotechnology Institute indicated it was an issue of getting a functional product to market:¹⁴

It is because companies focus on product. End products...Private funding will stop a bad project if it is not working. Government institutions will keep working at it. It is not just the money that is necessary, but the expertise, and the standard operating procedures. It is beneficial practices...We need money, but don’t get enough from the government. The government funding only covers salaries. There are other sources, too, like the World Bank. But the World Bank funding is not sustained. Neither is USAID. Transgenics need sustained funding.

These comments express a tension between funding processes and the resulting products.

Currently, private money funds products and the government pays salaries (IFPRI 2016). What this means is that support for basic science is overshadowed by how marketable a product is. Its

¹³ Interview with AATF Communications Manager (5.28.15)

¹⁴ Interview at KALRO Biotechnology Institute (7.29.15)

usefulness or effectiveness, while desired, is not the primary goal. Its perceived effectiveness, however, matters greatly. Philanthropic foundations have large impacts at points of market access (McGoey 2014), making them more powerful in determining research and development pathways for crop biotechnology.

The emphasis on marketability can be seen in funding from the US government (USAID) as well. According to US agricultural experts, the regulatory approval process gets more money than any other aspect of biotech.¹⁵ The USDA calls this approach “funding product development on the ground.” In other words, getting products to market. The general case is that when US expertise is called upon to improve a crop, and they choose to do so with transgenics, they run into a host of regulatory constraints that prevent them from fulfilling project goals. So, they send advisors to help develop appropriate regulation. This requires the creation of biosafety bills, implementing regulations, technical support, and training. This is how African countries’ policies start to look like American policies. Additionally, this help must be sustained. Biotech projects have very long timelines from research and development to market distribution, but public funding usually cannot span the whole length of the project. There needs to be buy in “on the ground.” This is where the private sector can help keep it going. A university might create the project in the lab, but then private seed companies are brought in to produce and distribute. In other words, private funding comes in once they see it will be profitable, or if they see the potential to make it profitable through changing regulation.

In short, abandoned narratives of aid (the “conditionalities” discussed above) are being resuscitated and revised to support new pathways for private financing to enter the development industry. As donors continue to take over public service provision through grant making, they

¹⁵ Interview with USDA – FAS Trade Specialist for Africa and the Middle East (8.19.14)

increasingly gain control of decision-making processes about development strategies that were formerly made by governments. This challenges the idea that government entities have any chance for autonomous development in the near future.¹⁶ In the WEMA case, KALRO is almost wholly dependent on external grants for basic research, and additional grants are focused on changing government policy regarding GM crops in general.

Creating market subjects

While Kenyan institutions are functioning as spaces for the production and maintenance of neoliberal governance, so are the individual bodies of the poor. Philanthropy has long been the expansion of “care” in the service of alleviating social tension between classes, but Mitchell and Sparke (2016) find something new in the way people are being pulled into “market-mediated partnerships” and away from making demands on the state (p. 2). This is in contrast to the Rockefeller and Carnegie Foundations historical support for public health and education services. Following contemporary critiques of millennial philanthropy, they argue that not only does the “business logic” of modern day philanthropies lack democratic accountability and skew development toward the market, but that it does so by enrolling new market subjects who have been created by the market failures of the original Washington Consensus (including SAPs). These new subjects replace the nation-state as the focus of governance, localizing the targets of investments (Mitchell and Sparke 2016). This encourages personalized responsibility for hunger and poverty, driving measures of human value closer and closer to ROI (return on investment). It also produces “an archipelago” of selectively targeted interventions based on their inclusion or exclusion from development grants (Ibid, p. 21).

¹⁶ See: Mercer (2003) on how “partnership” conceals conditionalities

Mitchell and Sparke describe investments in health and education, formerly the acknowledged purview of government, but the same process is happening in agricultural development. These areas were all undermined in the name of economic growth through externally imposed structural adjustment programs, the successful failure of which is now used to justify using market tools to create market subjects to remedy this (market) failure. Mitchell and Sparke (2016) describe this “successful failure” as the forced privatization of public service provision that resulted in market-state failure, abandonment and dispossession – all of which was discursively blamed on government corruption and state failure (p. 3). This matters in the WEMA context because communities are steered away from challenging patents or demanding the Kenyan state honor its constitutional decree to the “right to food” and toward those corporations whose intellectual property rights limit access in the first place. Thus, it is a “triple movement” of extending global market practices, creating new subjects, and covering for market failure (Ibid).

In the agricultural sector, narratives of economic connectivity resulting in poverty alleviation require a target of intervention – a poor farmer. Though the “smallholder farmer” is the rhetorical target of WEMA, no smallholder farmers have any say in project development and are being included in implementation only in terms of projects that promote “knowledge awareness.”¹⁷ When asked if smallholder farmers want this technology, advocates of crop biotechnology respond with a resounding yes. But when questioned further about this “choice” under conditions of intense vulnerability, their answers become less clear. A research scientist at the University of Nairobi explained it this way:¹⁸

A hungry man cannot choose food...Here you want something to eat. You don't want choices. You want something to eat and you don't have it...If you look carefully at the

¹⁷ See list of AATF grants in “background” section

¹⁸ Interview at UoN Science Campus (7.28.15)

GM debate, you will never get a poor person opposing GM technology or food. Have you found one? A poor person?

One way to interpret this sentiment is that self-determination is only possible at a certain level of economic stability. Starving people are not produced as political subjects, rather they are produced as subjects in need of care. Therefore, production systems are outside of their control. Having a say in how their lives are governed takes a back seat to survival. But this argument is in direct contrast to the broader narrative of GM crops as “one tool in the toolbox.”¹⁹ As Monsanto’s representative noted, “We [Africans] have the right to say no. Let farmers have a choice. Biotech is just a tool. You can do organic farming, too. Anti’s [*groups who support the ban*] don’t allow the farmers a choice. Farmers are very smart; they won’t use something that does not work. No matter how poor you are, if something doesn’t grow, you will not use it next time.” This is how the WEMA project uses individual sovereignty narratives to advocate for the takeover of African seed systems by US corporations.

Having a choice also implies that there is time to experiment with new and unproven products. But the immediacy of hunger in Kenya is what is used to justify improving crops faster. The same UoN scientist (as above) put it this way:

The issue is this: We have people who are starving even as we talk today. Those models [agroecological] are good, but they will take time. At the moment, as we talk now, we cannot let people die as we follow a model. We have to produce food quickly.

Yet, while they stress how important it is to solve the problem of hunger immediately, they take no issue with the kind of risk this places on farmers. The only way for farmers to determine if GM seeds work is to test them. This means that the big risks which the Gates Foundation takes are then transferred to smallholder farmers. The diffusion of risk goes hand in hand with the

¹⁹ This was a consistent narrative in interviews, coming from participants at Monsanto, two Kenyan universities, the Program for Biosafety Systems, and AATF. It is also widely used in the US by GM advocates, as well as by Mark Lynas, who traveled around East Africa promoting GM crops as part of a Gates funded tour.

diffusion of technology in the WEMA context. While the Gates Foundation can afford to fail, farmers have fewer options if the promises of GM are not realized. For a crop not to work means more than lost income in many situations. According to the “International Assessment of Agricultural Knowledge, Science, and Technology” (World Bank 2008), diversifying products and focusing on soil health is a better strategy for reducing vulnerability in this context.

Data that proves the effectiveness of Bt TEGO is also hard to come by. Most of the reluctance to share information on yields came from WEMA partners (at the Program for Biosafety Systems and AATF) not wanting to breach confidentiality agreements, an understandable outcome of partnering with a corporation whose profits are based on patents. Additionally, there is zero data that suggests Bt TEGO will benefit smallholder farmers. Only confined field trials (CFTs) have happened, and that data is not available to the public. Groups who have seen the field trials (including the AATF and PBS) attest to the amazing results, which is what they tell farmers, but no one actually knows how it will work once commercialized. Without the results of CFTs, or data on smallholder farmer implementation, the risks are relatively high for vulnerable/hungry populations.²⁰ Assessing risk by looking at other African examples does not provide much comfort. Both the South African and Burkina Faso cases suggest that long term benefits to smallholder farmers will not materialize, mostly due to the kind of material provided by Monsanto in these situations.²¹

This argument (for wariness in incorporating smallholder farmers into global biotechnology circuits) is not to deny the prevalence of hunger and poverty in Kenya. According

²⁰ There is data coming out of South Africa for the distribution of transgenic WEMA products. The first round (MON810) was a failure according to the African Center for Biodiversity, but the latest products are supposed to have remedied initial failures related to insect resistance.

²¹ In Burkina Faso, Monsanto is being sued for using a type of cotton that produces inferior cotton lint. In South Africa, the first generation maize crop, MON810, donated to the WEMA project there is widely considered to be “trash.”

to the UN, 43.4% of Kenyans live below the poverty line,²² with 21% of the population falling into the category of “undernourished” as defined by the FAO.²³ The goal of this research is not to prove that poverty does not exist, but to point out how and why it exists. Poverty is produced, maintained, and governed as a problem for a reason (Roy 2016). This can never be stated enough. Dominant development discourses continue to place poverty in the realm of individual failures that require technical fixes. But Kenyan researchers know that it is not that simple. When questioned about issues of sovereignty and choice in agricultural production, one University of Nairobi researcher linked governance to class politics:²⁴

Let me tell you one thing. The issue of GM is not about choices. It's about underbelly politics. Because, when people get out of poverty, as a politician, I'm in danger. One, they will compete with me. And, two, they will not listen to my falsehoods. Yes. Because the rich cannot vote. The rich are very busy, they do not go to the voting station. Somebody who is well off has no time for queuing. They cannot queue. So you must ensure that you have an adequate number of poor people who can queue to vote for you.

His argument is that keeping Kenyans in poverty is essential to current state governance, and that preventing people from having affordable food is part of this political strategy. While it is unclear that GM crops would produce more food and/or reduce maize prices in Kenya, his argument is that national politicians prevent outside connectivity to further their own interests. This argument positions GM crops as a democratic tool, working against the interests of entrenched elites and for the poor. Yet he is arguing for the same pathways that give Monsanto and the Gates Foundation control over Kenyan seed systems.

²² <http://hdr.undp.org/en/countries/profiles/KEN>

²³ <http://www.fao.org/faostat/en/#country/114>

²⁴ Interview on UoN Science Campus (7.25.15)

Addressing the colonial present

The WEMA project can be seen as an instance of economic imperialism, targeting both Kenyan institutions as “partners” and individuals within the Kenyan state as global citizens. As the last chapter argues, this targeting results in differentiation between the poor and middle classes, producing uneven opportunities for harnessing economic connectivity. Kenyan researchers (both directly and indirectly affiliated with the WEMA project) see possibility in these types of technological partnerships to address the unevenness of the colonial present. Kenyan plant breeders are tired of being “behind” the West in terms of agricultural technologies, and resent the narratives that continually frame the continent in terms of lack. At the same time, they perpetuate narratives of a new Green Revolution for Africa, narratives based on Africa being “bypassed” during the GR in Asia (Conway 1997). Thus, they harness and contest narratives of unevenness and connectivity to fit their strategies for poverty reduction as well as their own perceptions of national identity.

Kenya is used to being the regional leader in the East African Community, influencing both Uganda and Tanzania on economic, political, and science policy. The threat of losing this influence, as well as broader investment opportunities to neighboring countries, because of the ban on GMOs affects Kenya’s standing in the region. In other words, Kenya is dealing with the geopolitical implications of the “postcolonial condition” (Gupta 1998) at the same time they are managing their position as a regional hegemon. How they negotiate these roles in regards to crop biotechnology is complex, justifying inclusion into circuits of global capital and knowledge production in complicated ways. These narratives can be seen in the tension between arguments for food security that justify both the WEMA partnership and the ban.

The relationship between the WEMA project and the ban is crucial to the future of crop biotechnology in Kenya. WEMA is the largest biotech project in Kenya and is being developed simultaneously in four other African countries, making it a vital component for the success of both national and global biotech markets. The first GM product to be commercialized in Kenya is supposed to be the Bt maize (Bt TEGO) developed as part of the WEMA project. But if the ban remains in place, and Bt TEGO does not pass the regulatory hurdles to get to market, then Kenya has little use for its National Biosafety Authority, and the development of crop biotechnology in Kenya could grind to a halt (in an already slow-moving sector). This is frustrating to advocates of GM crops in Kenya.

Researchers who work in crop biotechnology at Kenyan universities express disappointment with their position of playing “catch up” to Western nations in terms of technology. This is partly the result of a simple cost-benefit analysis that acknowledges the reliance on imported technology and sees a future of increasing costs to keep up. A research scientist at Kenyatta University argued for trying to break that cycle:²⁵

And, 10 years, 20 years, down the line, we realize the same technology is the one that we are going to use. And, at that point, we won't have anything in the pipeline, so we will still – if the fear is about the Western technology – we will still rely on Monsanto to invest in it. But later on. So, just do it.

This statement assumes a continued unevenness in the international order and presents a realist argument for the associated outcomes. Not only does it concede that Kenya will not have “its own” technologies anytime soon, but that the technology that they will have to purchase is the same that is currently prevented by the ban. This illuminates the temporal unevenness of technology transfer – the technologies that Monsanto is donating to African countries now are often technologies that have run their course in the US. Monsanto positions these technologies as

²⁵ Interview at Kenyatta University (7.15.2015)

“improved,” but in fact, they have been discontinued in the US context for important reasons. Having only just become aware of the implications of this (in South Africa and Burkina Faso), it makes no sense to deny access to a technology that is time sensitive, especially if its use seems inevitable.

According to this researcher, not having anything “in the pipeline” just makes Kenya more vulnerable later on. A representative from NACOSTI, the National Commission for Science, Technology, and Innovation, agrees:²⁶

You cannot stop an emerging technology. You cannot run away from an emerging technology. If we don’t embrace it, we will import it at great expense. It becomes expensive for the country in the long term.

The idea of “progress denied” is both temporal and spatial. The same researcher (as above) expressed concern at the increasing use of GM technology globally, specifically comparing Kenya to Western and BRIC countries:²⁷ “I don’t see the reason why this technology is benefitting Brazil, it is benefitting part of farmers in the US, it is benefitting Australians and many others and now China.” His fear is not just of a continued, or reinforced, North-South divide, but also of a slipping status within the global South in terms of economic growth and knowledge production. Kenya is a global leader in mobile banking as well as a leader on the continent for communications technology and renewable energy.²⁸ Nairobi is heavily connected to London through trade and investment as well as to the US through counter-terrorism projects. These colonial/imperial connections have given it a privileged place within Africa.

When researchers express frustration with “the ban,” this manifests as a critique of the Kenyan government and its place in the international order. The ban has been blamed for

²⁶ OFAB (Open Forum on Agricultural Biotechnology) meeting (6.11.15)

²⁷ Interview at Kenyatta University (7.15.2015)

²⁸ <http://www.economist.com/blogs/economist-explains/2013/05/economist-explains-18>

discouraging university students in STEM disciplines (Odunga 2017), pushing investment into neighboring countries (Otunge 2014), discouraging donor support for improved seed systems (Andae 2017), and contributing to starvation within Kenya. As the above comment illustrates, researchers expect to see gains in their own country from similar technologies.

Not only do researchers expect to profit from increased crop production, but they also do not want trade to move to other countries because of the ban. GM crops are not currently accepted at Kenya's main port of Mombasa, but they are in Dar es Salaam (Tanzania) and Djibouti. Textile manufacturers who wanted to open factories in Kenya are now looking to Ethiopia and South Sudan because they depend on Bt cotton. Thus, advocates of GM crops are tacking on arguments of economic competitiveness to narratives of food security.

The economic costs also strike a blow to national egos. One AATF administrator lamented at an Open Forum on Agricultural Biotechnology, "Kenya leads and Uganda follows. So, why is Uganda ahead on FTE (full-time researchers)? We think we are leaders, but we aren't leading."²⁹ He was reacting to the presentation of a report on Agricultural Science and Technology Indicators (ASTI) that showed Kenya's total number of agricultural researchers stagnating over the last five years (IFPRI 2016). In contrast, Uganda's total number of agricultural researchers almost doubled from 2000-2014, as did the number of PhD-qualified researchers. Notably, the report also showed significant numbers of researchers leaving KALRO since 2013 (post-ban) in order to pursue more attractive employment at other agencies. As the numbers on investment and employment suffer, so does the perception that Kenya is the leader.

The ban, and supporting narratives for preventing access to GM crop technologies, are seen as limits to the sectors that bolster "national security." Whether the argument is for

²⁹ AATF Regulatory Affairs Manager (6.11.15)

increased food security, less dependence on imperial nations, or increased cooperation among nations in the global South, crop biotechnology is promoted as a way to achieve this security. It is also curious to many biotech researchers that the Kenyan government continues to support the ban. If NACOSTI is funding GM crop research, for example, but not challenging the ban, what does that mean for “the government’s” position on GM crops? The Kenyan government is not a coherent entity, obviously, but it is not easy to identify where support for the ban is coming from, why it still exists, and, more importantly, how it functions in the colonial present.³⁰

Going local?

One of the most provocative questions that I asked interview participants was “What does colonialism look like in African agricultural systems?” This question led to lively and engaged discussions about the nature of sovereignty and what differing conceptualizations of the term meant for economic development. A research scientist at Kenyatta University accepted my contention that crop biotechnology could be viewed as a colonial technology (specifically in regards to appropriating African property) and expressed the desire to know how Kenyans should use GM technology “in a good way.”³¹ If we know the pitfalls of colonial connectivity, he asked, then how do we use this technology and not let it destroy us?

His answer was in “checks and balances” (regulatory mechanisms) combined with a personal belief in the efficacy of the technology that overshadowed my “colonial” framing. He and other biotech researchers see possibility in developing their own crops with their own expertise. This topic was discussed publically at an OFAB meeting, with local university

³⁰ Taken from interview with University of Nairobi research scientist (7.28.15). See methods chapter for text.

³¹ Interview at Kenyatta University (7.15.15)

researchers agreeing that what Kenya needs is local investment in crop biotechnology.³² The same researcher argued: “We need a local product. One not from the West. And we need to highlight that. Demystify the process.”

Even though these researchers understand the discursive and material benefits of developing local technology, they also put forth narratives that challenge the core/periphery model of technology transfer, choosing to interpret GMOs as a “global” technology, regardless of where it originated. I interviewed one University of Nairobi researcher in both 2013 and 2015. During the second interview he asked:³³

But tell me, which technology in the world today is not Western? Tell me one. And, once the technology has spread worldwide, it is no longer considered Western. You just develop your own systems for regulating it. Even if you bleat like a goat, ‘It is Western...it is Western,’ for the rest of the years. What will happen? Nothing.

Thus, the rationale for allowing WEMA, and other partnerships like it, is to improve their own ability to develop “non-colonial” technology that benefits from the knowledge that “late-adopters” have (Rogers 2003). That the US and others have already run into problems with insect resistance and the overuse of herbicides does not phase Kenyan researchers, rather it gives them confidence that they would not make the same mistakes.

And, they do not perceive other adverse consequences of partnering, such as competing on a global market. After our discussion of colonialism (see above), the Kenyatta University researcher explained how economic connectivity can be harnessed to develop local resources in an uneven context:

Because why are we fearing Monsanto? If I am running a race, I would want to race with Usain Bolt, because that’s the best in the market. So, you can look at Monsanto and say that it is ahead of you and, therefore, do something. Copy. Learn quickly. Partner. Get the technology. Because they are ahead of us in this, you know? It is not because of anything else, it is because they have the resources and they are a company.

³² Hotel Jacaranda, Nairobi (6.11.15)

³³ Interview at University of Nairobi (7.28.15)

In this framing, the issue is firmly based on access to resources and nothing else, meaning it has nothing to do with power imbalances, the Kenyan capability to conduct or regulate crop biotechnology, or intellectual property rights. At the same time, this researcher suggested that possibilities for addressing enclosure lie with the government. He questioned the motives of the government, asking if it is so worried about safety issues concerning GM crops, or corporate control over seed, then why does it not negotiate different deals with corporations in terms of resource use and profit. He said that was the government's job. Alternatively, it could invest in local germplasm, so that when it needs a particular crop or trait, it can approach a Kenyan university instead of a foreign corporation. He happens to have developed this technology himself. This researcher did not see Monsanto as a threatening entity, rather he saw his own government as lacking the political will to work for the people.

Researchers and plant breeders want to invest in crop biotechnology to advance national and regional goals. But the government (or some part of it) is preventing this. There is the suggestion that the urban poor pose a threat to governance that the state is trying to manage. And that the state is genuinely concerned for the safety of its citizens. Regardless of state intention, these researchers and administrators want to perform the practices of science and help poor farmers. But there is no such thing as choice for them or for the poor under this type of donor pressure and with such obvious benefits to their own economic status. Thus, they necessarily reinforce the divide between a poor, rural population and their own scientific expertise (based in the university) in order to achieve what is perceived as a "win-win" situation.

Conclusion

Poverty governance through the WEMA project can be seen institutionally, as the Kenyan government opens up access to its institutions (like KALRO), its legal structures, and its regulatory frameworks to be disciplined by the best business and best science practices of US donors. The subjects created through these partnerships, both poor and middle class, are used to cover what have always been failures of “the market” and embed market-based ideas deeper in proposed solutions (Mitchell and Sparke 2016). The result is that certain groups are included and others excluded from citizenship benefits. For example, private universities prosper and KALRO does not (IFPRI 2016). Kenyan scientists find work while farmers still go hungry. Yet, the contradictory way in which humanitarian narratives of food security are used to argue for collaboration with corporations like Monsanto in the present in order to potentially sever that connection in the future suggests a more complicated process than the continued neoliberalization of agricultural systems. The competing sovereignty narratives are complicated even further by a politics of risk that places the burden on smallholder farmers. Thus, the ethical goals of national sovereignty discourses cannot be separated from the biopolitical outcomes of differentiated citizenship benefits.

Tania Li (2014) ends her story by telling us that shame and concern will not solve poverty and hunger, meaning that humanitarian initiatives are not sufficient to address the unevenness of this kind of capitalist development. This chapter provides additional evidence for the argument that humanitarian initiatives can, in fact, be the mode by which unevenness is maintained. But it also illustrates Li’s argument that social change comes about through the struggle between groups. Development is not a linear process, nor one that we cannot wish for. It is a relationship that continues to shift through the tensions that it produces. If Kenyans cannot

run away from this technology or stop it from becoming global, as the NACOSTI member indicated, then developing the political tools to manipulate it in the context of uneven development is a necessary project for autonomous development in Kenya.

Colonialism appears in a different form here. It is not direct rule over government institutions and/or civil society by a Western power, nor indirect rule by a rural tribal authority (Mamdani 1996) – but rather a form of control that includes the appropriation of resources via a moral authority produced through partnership. It is still the colonialism of humanitarianism and Western science, but it is being forged by enrolling the poor and middle classes in the project of their own management.

CHAPTER 7

CONCLUSION:

THE RELATIONSHIP BETWEEN PROMISE AND PERIL

Writing in the context of the “new scramble” for African resources, Padraig Carmody (2009) notes that Africa attracts both positive and negative interest from world powers – “positive” in the sense of a desire to claim oil and mineral wealth (and, I would add, seed and land wealth), and negative interest in “containing unwanted flows of globalization” such as mass migration and terrorism (p. 353). Unfortunately for world powers, the process of resource extraction is often the source of the ills it seeks to contain. Carmody argues that this contradiction (engagement versus containment) and the “adverse differential incorporation” (Bush 2007) of Africa into the global economy has resulted in the restructuring of governance on the continent, with variegated results. For example, this form of globalized governance can require extractive corporations to work with authoritarian regimes to ensure access to fixed resources. The relationship between domestically-based and transnational actors is one of both coordination *and* contestation.

As the previous chapters show, this tension characterizes the WEMA project as well. But in Kenya, the resources necessary for Monsanto’s spatial fix (both human and seed) are not so fixed. They exist across state boundaries and unevenly within them. And their extraction is not facilitated by “the state” as a process of elite rent-seeking, but by a network of partners, financed by the world’s largest philanthropy. The Gates Foundation acts as a “brokering” agent in the

global governance of GM crops, providing not only the financial support, but also the moral justification for targeting the resources of the rural poor for improvement.¹

Carmody's (2009) geopolitical framing positions the global North as the source of resource sovereignty, with its tentacles reaching down into the global South, which "gives away" its own sovereignty in return for investment (p. 354). This conceptualization of governance as mediated through states does not explain how bodies are enrolled in processes of resource extraction/development, or how difference is mobilized to facilitate capital accumulation outside of the Kenyan state. Alternative theories of governance/government (disciplinary power, biopower) are necessary complements to explaining economic violence in this regard, and for conceiving of disruptions to neoliberal narratives of poverty. This dissertation argues that the concept of the spatial fix goes far towards explaining the global proliferation of GM crops as a form of enclosure, but that the "logic of capital" only tells us why a corporation would seek a spatial fix, not why it finds it. What is less clear is how the appropriation of seed germplasm (and to a certain extent labor) is framed as humanitarian, and how it is both facilitated and contested in the places where resources are located.

Transnational corporations are not always and everywhere a dominant force in global capitalism. Yet they are intimately tied to the processes of governance produced through development partnerships to bring the poor into circuits of capital. A primary output of this form of economic connectivity in the WEMA case is the production of a dual structure for Kenyan citizenship. This is a class divide in the sense that the poor are materially/discursively separated from more economically successful classes, but it is also based on an identification with a particular form of knowledge production derived from Western, industrial crop science and

¹ Kohl-Arenas (2015) describes the Rockefeller Foundation's efforts in California in the 20th century as "brokering consensus."

dependent on private property. This identity – that of the moral, humanitarian scientist – is marshalled to close off broader ways of understanding the promises and perils of GM crops for African agricultural development.

Early discussions on the ethics of and potentialities for biotechnology in society have been largely eclipsed by a single-minded focus on world hunger, which, in turn, has produced a political binary where one is either “for” or “against” GMOs. The result is a collapsing of multiple applications of biotechnology, forms of genetic manipulation, causes of hunger and poverty, and venues for addressing this contested technology into few political options. The goal of this dissertation is to help expand the arena of “the political” in this context, calling attention to individuals and institutions that might not traditionally be seen as sites of governance.

Exploring the hopes, dreams, and educations of plant breeders and research scientists as well as the connections that lead them to jobs in areas of “expertise” opens up universities and funding institutions to greater scrutiny.² Thinking about poverty as the production of a “scientific” class of humanitarians defined against a rural poor does the same. Following Stone’s (2011) call for more research on the synthetic, indirect, and social aspects of crop biotechnology, this dissertation explores the co-production of seeds and subjects as a primary output of biotechnology partnerships.

Prearity, partnership, and profit

Private funding from independent foundations is increasingly mobilized for public service provision around the world.³ Thus, there is a growing need to understand the processes

² Kloppenburg (2004) produced the foundational text on the political economy of crop biotechnology in the US university, but focused less on the subjectivities that are also produced.

³ Independent foundations – separate from corporate foundations – are used to insulate the fortunes of the super-rich from taxes that would go to public service provision (Hay and Muller 2014). There are more than 200,000

enabled by this type of philanthropic power. How does philanthrocapitalism function as governance? How is it different than or complicit with state/corporate power? And what happens when independent foundations fund projects that target vulnerable populations or redirect rights-seeking strategies toward the market? This dissertation contributes to the literature on philanthrocapitalism by beginning to answer these questions in the context of one of the largest philanthropic interventions into African agricultural technology.

That developers are the primary beneficiaries of development is nothing new, but the WEMA project suggests something more complex than corporate domination of global resources. Monsanto is not only finding a receptacle for its trash and developing new markets for the future, its actions are being subsidized by a non-transparent, non-democratic organization acting in the interests of the richest man in the world. The rationale for technical intervention in African seed systems is no longer state building (as with the Green Revolution), but rather market building, with success supposedly measured as economic growth for the poor. However, in Kenya, the relationship between GM crop yield and income generation cannot yet be measured. What can be analyzed are the connections among WEMA partners and their discursive target, as well as the types of governance that the partnership perpetuates: enclosure, subject formation, and privatization.

Understanding Monsanto as an actor who needs to be privately subsidized via philanthropy is key to understanding the relationship between the WEMA project and production of poverty. Chapter one shows the precarity of crop biotechnology as a global commercial

foundations in the world today, the vast majority of which are independent foundations like the Gates Foundation (which is the largest by far, with an average annual expenditure of \$4 billion). There are approximately 196 countries in the world. Though states manage significantly larger budgets, the growing number of these foundations indicates a need to understand the mechanisms through which they govern resources.
<http://data.foundationcenter.org/>

enterprise and details the strategies that biotech corporations like Monsanto mobilize to remain profitable. This includes seeking a spatial fix to crises of accumulation (i.e. overproduction) through the process of enclosure. In addition to partnering with the Gates Foundation to seek new markets and appropriate African germplasm, Monsanto has also sought stability in corporate consolidation. The \$66 billion sale of Monsanto to Bayer is one of a “trio of megamergers reshaping the global agribusiness industry,” including the \$142 billion merger of Dow Chemical and DuPont and ChemChina’s \$44 billion purchase of Syngenta (Megaw 2017). Consolidation and privatization reduce Kenyan farmers’ access to diverse resources and limit the political possibilities for addressing unevenness in global agricultural networks, making poverty a more likely outcome. This is in direct contrast to the stated goals of the WEMA project.

Though biotech corporations need help remaining profitable, narratives produced through the WEMA project mischaracterize the problem of poverty and reverse the identities of provider and recipient of development. These narratives position Monsanto and the Gates Foundation as donors (of funding and technology), rather than recipients of Kenyan germplasm and labor. Chapter two describes the ways in which humanitarian narratives of objective science and care are circulated in the WEMA project as justification for technical intervention into Africa farming systems. It also argues that the primary outcome of the WEMA project in Kenya is the production of class identities, as Kenyans are enrolled in the aid of the super wealthy. The production of technological subjects is essential to the Gates Foundation’s control over African farming models.

The result of this donor/corporate partnership is the increased privatization of Kenyan seed systems, research institutions, and NGOs. Though these processes are incomplete and full of tension, they also stem from colonial narratives of trusteeship and improvement that have

categorized resource extraction in Africa for centuries. Chapter three illustrates how incorporation into uneven partnership structures can facilitate neocolonial modes of governance and at the same time provide openings for addressing economic unevenness on a global scale. However, this potential does not accrue the poor, who, though necessary as the discursive target of development projects, do not see material gains. The promises of GM serve only to reinforce uneven development.

What promise would look like

The promise of GM crops to solve global hunger, poverty, and environmental degradation exceeds the possibilities of crop biotechnology. This is because poverty is a complex political-economic designation, not a laboratory experiment. Neither the Gates Foundation nor Monsanto have the skills to address political problems such as land access and ownership, benefit sharing agreements for seed, or protection on global markets. Attempting to think through the WEMA partnership as a progressive vehicle for addressing poverty might seem contradictory, but in the interest of opening up spaces of politics, I offer the following fantasies:

It would represent promise if development partnerships like WEMA provided the possibility of capital accumulation in Kenya. This would require the Kenyan government to sign and enforce contracts with foreign corporations detailing a benefit/profit sharing structure that acknowledged the contributions of national agricultural research organizations (KALRO) and Kenyan farmers. Kenyans would get paid for their germplasm and labor. Agreements that protected local seed companies (if there are any left that are not owned by the “Big 6”) would allow them to invest in seed production as well.

It would also represent promise if capacity building was conceived of as a way to grow local power. Right now capacity building means making KALRO more conversant with AATF and the imperatives of corporate donors. Kenyans are not trusted to do the heavy lifting. They do not participate in transgenic breeding processes (transformations), rather they provide fields that serve as test grounds – a process that could be described as another form of land grab. The decisions are controlled by the Gates Foundation and Monsanto (via the AATF), and the high tech work done primarily in South Africa, where appropriate facilities (high capacity, high standards) exist. Development partnerships could instead allocate funding for infrastructural improvements at KALRO and Kenyan universities, growing a domestic base for improved technologies.

It would also represent promise if farmers were involved in decision-making processes, and alternative forms of agricultural knowledge could be heard/utilized within development partnerships. The idea here would be to develop appropriate technology for the needs of smallholder farmers that is not focused solely on productivity gains.⁴ This might result in the suppression of crop biotechnology, but it would also be a concrete expression of autonomy in decisions regarding farming models.

It is possible to imagine a scenario in which a Kenyan university, in partnership with KALRO, gets the funds for developing a local GM crop that suits the priorities of the Kenyan poor and not of a large, global agrichemical firm like Monsanto. In fact, considering the “trash” that Monsanto has provided to the WEMA project, this might relieve many of the concerns that people have about crop biotechnology – not Western, not corporate owned, not driven by donor desires, and not effective only within a pre-existing industrial model of large-scale agriculture. In

⁴ “Appropriate” technology (also called intermediate, labor-intensive, low-cost, liberatory, convivial, etc.) is a paradigm focused on community development rather than economic growth (Akubue 2000).

fact, Kenya has already developed and patented this kind of technology. Researchers at Kenyatta University developed a promoter for drought tolerance, patenting it in 2009 with the World Intellectual Property Organization (Oduor et al. 2009). This promoter can actually control and express the genes that confer drought tolerance in maize, and is being used in Kenyan labs at present.

The question is, why is Monsanto's product going through the commercialization process instead? This is a function of the partnership model of development, which looks to transnational corporations to provide resources and expertise, rather than investing in local capacity. It is also conditioned by the sheer amount of funding the Gates Foundation provides for public service provision in Kenya, not only in agriculture, but in other sectors such as health and nutrition. There is no such thing as refusing Gates Foundation funding, which (as noted in the introduction) heavily shapes the landscape of African agricultural development. Monsanto is, therefore, included in a process where it is not needed, showing the perverse outcomes of partnership and suggesting that "inclusion" might not be the way forward for crop biotechnology in Kenya.

Autonomy in the colonial present

In January 2015, Bill Gates told an audience in Brussels that he thinks "Africans ought to have a sovereign right" to use innovative farming techniques like GM crops.⁵ Sovereignty, in this framing, is defined as an individual ability to choose, or have control over, how to farm. This ignores the Kenyan ban on GMOs as the policy (no matter how contested) of a sovereign government.⁶ It also ignores the structure and decision making processes of the WEMA project,

⁵ <https://www.youtube.com/watch?v=ec0XZDgQ7XU>

⁶ Melinda Gates stated: "We think it's up to Kenya and Tanzania and South Africa to decide is that right for their economy and is that the way they want to feed people in their own country."

which provide very little room for choice. WEMA is more appropriately conceived of as a structure for receiving technology, not participating in decision-making. In the same discussion, Gates described crop biotechnology as a “very careful, known” technique (read: low risk) that “promises to solve nutrition problems, solves productivity problems, solves crop disease problems for African farmers, where it is absolutely a life and death issue for them.” Does this frame GM crops as a choice, then, or a necessity?

Carol Thompson (2014) has outlined the structural reasons why there cannot be sovereignty in the types of African agricultural systems supported by the Gates Foundation:

1. Seed access policy is being changed to encourage privatization, in opposition to the international legal principle of ABS (access and benefit sharing) as defined in the Convention on Biological Diversity.
2. CGIAR institutes are violating international law (Standard Material Transfer Agreements) to normalize exclusionary rights to seed.
3. The regional homogenization of seed laws violates national sovereignty.
4. Global corporations are buying local seed companies.

Thompson (2014) adds to Harvey’s (2003) *accumulation by dispossession* framing to show not just why the Alliance for a Green Revolution in Africa (AGRA) is appropriating African seed systems, but how. And the how is philanthrocapitalism. The changes listed above have all come since the Gates Foundation began funding AGRA as well as public institutions for seed production, known as CGIAR institutions (Consultative Group for International Agricultural Research).⁷ It funds international seed banks, preserving the “open access”

⁷ Though it is debatable that these institutions can still be considered public. The phrase “Consultative Group” has been jettisoned for the more realistic descriptor of a business partnership, “Consortium,” though the acronym remains the same. CIMMYT, IFPRI, IITA, and ILRI are all “CG” institutions.

principle, and then transforms them through its own business practices in order to achieve privatization for its partners (Thompson 2014). CIMMYT receives between 45-55% of their funding from the Gates Foundation “and their allies” (Thompson 2012).

Yet, this obvious privatization is contested. In both 2004 and 2010, international laws were passed to set up instruments for benefit sharing in international agricultural research centers, instruments that remain provisional due to a lack of funds for implementation.⁸ As Thompson (2014) notes, even with two international laws in place, venture philanthropy continues to ignore benefit sharing requirements for free access to seed produced by CGIAR institutions, creating markets even among public breeders. Thompson (2014) concludes that it is amazing that African governments still refuse to patent living organisms in this context, observing the theft of their genetic wealth, but supporting public breeding models as the best way to address issues of global hunger. Autonomy, in this case, comes at a high price.

Spaces of citizenship

If, rather than seeing sovereignty as an individual choice on the “free market,” we think of it as a biopolitical project dependent on delineating who is inside and who is outside of citizenship benefits (Barkan 2013), then what is the goal of “praxis” as challenge (Desmarais 2007, Edelman et al. 2014) – to collect everyone on the inside? What if “being inside” requires submitting to the accumulation of capital as a defining logic? In Kenya, urban, middle class plant breeders are being disciplined into corporate models of maize production with the specific goal of bringing peasant farmers into global circuits of capital. While contesting imperialism (as

⁸ The International Treaty for Plant Genetic Resources for Food and Agriculture (2004) and the Nagoya Protocol of the Convention on Biological Diversity (2010) under “Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising From Their Utilization”

uneven trade relationships or technology transfer) might include developing local capacity in new technologies, it can also demand that local farmers be used as test subjects for projects developed by US corporations and philanthropies. Two conflicting processes are at work here: challenging colonial legacies of indirect rule through local technological development and reproducing the dual governance structure of colonialism. Sovereignty is expressed as both resistance to and integration with state/corporate power. Kenyan farmers are threatened not only by their designation as peasant (as opposed to citizen), but also by their dis/connection to global markets. Thinking about these processes existing in the same space complicates the idea that GM crops are either good or bad for the poor. What the WEMA project illustrates is that practices of citizenship are being remade at non-national scales (Mitchell and Sparke 2015), enabling populations to be incorporated into global networks of individual entrepreneurship.

What is philanthropic power?

The way I have described it here, philanthropy is a subsidy, a way for struggling corporations to continue privatizing life and its governance. But how is philanthropic power entangled or complicit with state/corporate power? Stevenson (2014) argues that philanthropies (specifically the Gates Foundation and the Rockefeller Foundation) are semi-autonomous entities who support existing power structures, such as states and markets, which reproduce the problems they seek to address. Foundations do not have the capability to advance agendas on their own. In fact, they exist because of laws set by the state to protect their money from public use. Yet, they are the source of “some of the most significant innovation in governance developed over the last half century, focused on the development and distribution of public goods geared towards the world’s poorest people” (Stevenson 2014, p. 9). They discursively frame problems, set research

and policy agendas, and provide models of governance that are uncritically taken up by states (Stevenson 2014). Stevenson's argument is that these foundations do not change the fundamental rules of global political economy, rather they provide "institutional alternatives" to channel aid and investment (p. 17). In other words, the Gates Foundation supports states and other international development organizations engaged in issues of food security (i.e. the Food and Agriculture Organization of the UN) while using this influence to shape the public agenda. Stevenson (2014) sees this not as an undermining of state power, but as a bolstering of neoliberal governance.

This argument falls within the broader, critical literature on philanthrocapitalism that marks philanthropies as sites of anti-collective and anti-political action (Martens and Seitz 2015, Kohl-Arenas 2015). Because the resources of the Foundation are private, it is not held accountable for the huge risks it takes. The problems it decides to intervene in are also not collectively determined. The Gates Foundation's power hides behind the grant process. Grants do not allow partners to share risks; investment does. And Africans know this. On the continent, there has been a shift away from relying on individual giving by the super-rich and toward communal giving. The African Grantmakers' Network (AGN, started in 2009) highlighted the concept of "community philanthropy" at their 2017 conference, arguing that the future of philanthropy begins locally and helps communities establish their priorities and contribute their resources.⁹ Additionally, the African Philanthropic Forum was established in 2014 "to build a learning community of strategic African philanthropists and social investors committed to inclusive and sustainable development throughout the Continent."¹⁰ These models are attempts to democratize African philanthropy and switch the focus from international NGOs and

⁹ <http://africagrantmakers.org/community-philanthropy/>

¹⁰ <http://africanpf.org/who-we-are/>

grantmakers to African groups doing the same work. The AGN also published a 2015 report detailing the dramatic increase in US foundation funding focused on Africa, which increased at twice the rate of overall international giving from 2002-2012 (Lawrence et al. 2015). The Gates Foundation was the main source of this increase, though most of this funding “for Africa” was awarded to organizations not in the region (Ibid.)

To help understand how philanthropic power works in the colonial present, further empirical studies could detail the processes of governance generated by the push/pull of engagement and containment that characterize the current period of globalization in Africa. While this dissertation describes the philanthropic/corporate partnership in some detail, it lacks a deep explanation of the philanthropic/state relationship. Kenya, for example, has never been subservient to global financial institutions, even during the period of structural adjustment. In fact, Kenya implemented very few of the structural reforms required by aid conditionalities in the 1990s, though it received over \$2.5 billion (Appendix B: Table 2). The relationship between African states and international donors (philanthropic or otherwise) is complex. Though states are disciplined to “market-based” imperatives, the outcomes for collective decision-making in the context of philanthrocapitalism requires further elucidation.

Looking forward

Last week I attended a screening of *Félicité* (2017) at a local theater. The filmmaker, Franco-Senegalese director Alain Gomis, answered questions before the screening about representations of African life in a postcolonial context. He discussed the multiple and varied aspects of an “African” identity before sighing, and concluding: “I am just tired of having to represent how...or convince people that I am human” (my translation from French). This

problem of identity, that non-Africans cannot see Africans as human (or complex or diverse), is the problem of poverty. It is what allows intervention by technical experts into selected parts of African life, usually those parts connected to “the market.” And it is a problem that exceeds the limits of science to address. The best “tools” to address this problem come from the arts and the humanities – for example, a film that allows Africans to be seen as human, instead of hungry. My dissertation does not attempt to represent “Africa” or “Kenya” or any specific group of people or place. But what it does do is explore a relationship of power that requires a narrative of Africans as undifferentiated – as poor farmers, as targets in need of intervention. This narrative erases any depth or multiplicity that exists in “the poor.” Yet, at the same time, my research shows how duality (in terms of class) is produced within agricultural development partnerships as middle class Kenyans define themselves against this poor target. This duality is a colonial legacy (Mamdani 1996), and it is also what African filmmakers are contesting. In this regard, my research exposes colonial narratives and reproduces them as a binary identification.

So, where to go from here? One direction is to identify the mechanisms by which philanthropic agendas can be shaped and how they can be held accountable for their actions. This is a difficult task given the amount of resources the Gates Foundation has at its disposal as well as its structural independence. The other is to continue to identify the ways in which science can be used for decolonizing practices, but to pointedly show the limits of this endeavor. Integrative science means searching for more appropriate ways of knowing – not in seeking to fill gaps, but in acknowledging when and how certain forms of knowledge production run up against the limits of their use.

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APPENDICES

Appendix A:
WEMA Partnership Structure

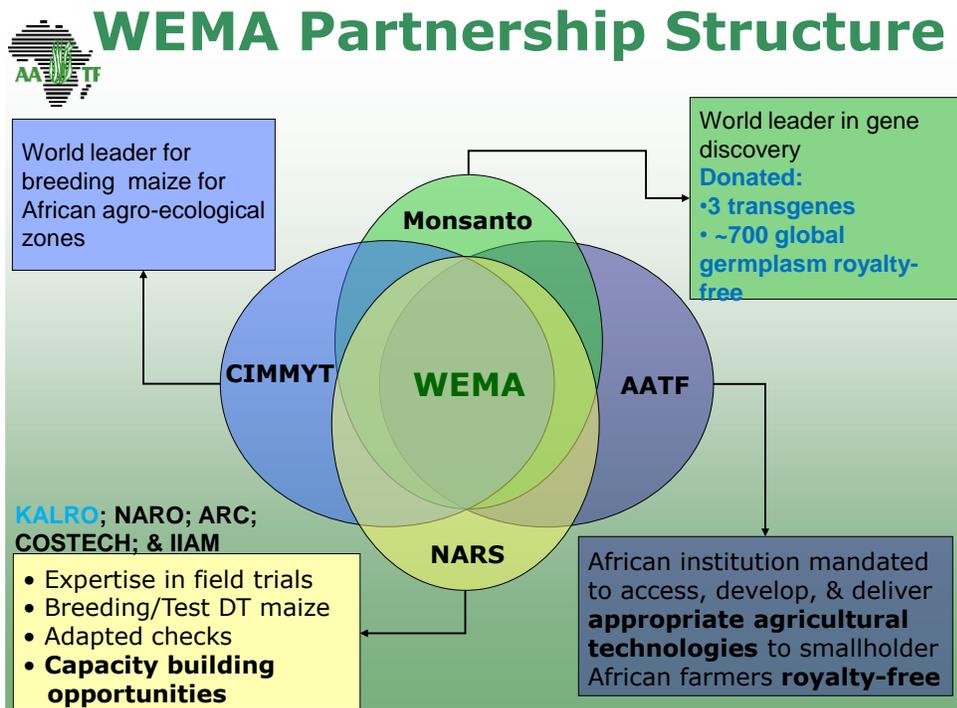


Figure 1: WEMA Partnership structure

Source: AATF Presentation 19 May 2015, Royal Orchid Hotel, Nairobi, Kenya
Dr. Sylvester Oikeh: "STAK-AATF Sensitization Workshop on GMOs"

WEMA Structure

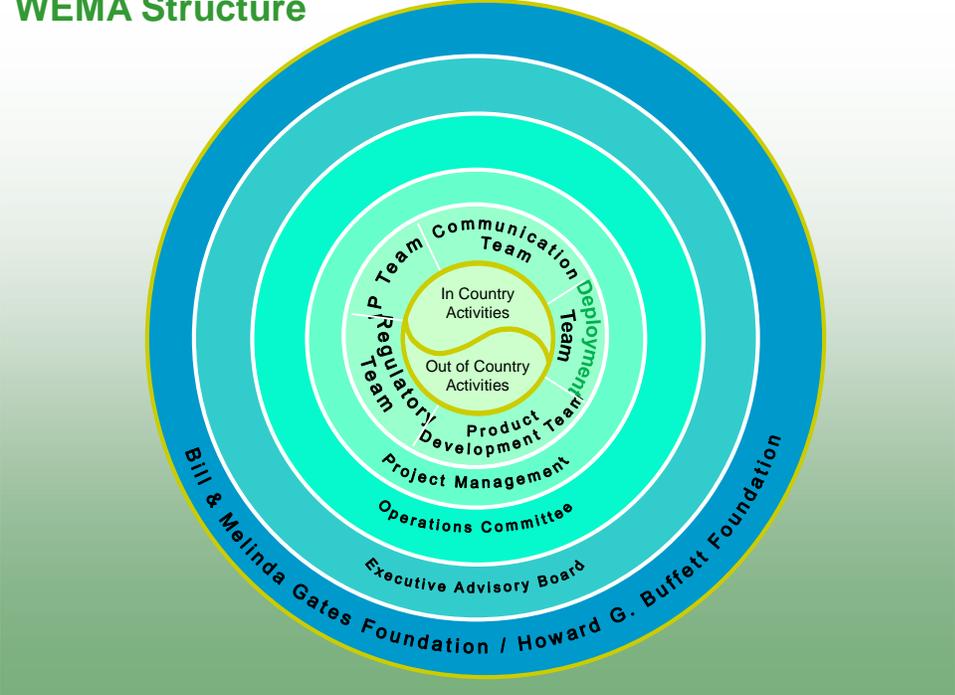


Figure 2: WEMA structure

Source: AATF Presentation 19 May 2015, Royal Orchid Hotel, Nairobi, Kenya
Dr. Sylvester Oikeh: “STAK-AATF Sensitization Workshop on GMOs”

Appendix B:
The Gates Foundation vs. structural adjustment:

From 1980-1996, Kenya received just over \$2.4 billion in loans via international financial institutions (administered by the World Bank). About 40% of these were structural adjustment loans, designed to improve economic growth through policy reform of financial institutions. The agricultural sector received \$460.7 million. These policies did little to reform the Kenyan government or address domestic poverty. (Kenya did not abide by many of the conditions.) The Gates Foundation has given comparable amounts through a variety of programs, most notably through the Alliance for a Green Revolution for Africa (AGRA) and the African Agricultural Technology Foundation (AATF). AGRA alone has received \$620,814,558 since 2006.

Table 1: Kenya: Adjustment Loans (1980-96)

<i>Fiscal Year</i>	<i>Adjustment Loan</i>	<i>Net Commitments (millions of USD)</i>
1980	SAC	55.0
1983	SAC II	130.9
1986	SECAL (Agriculture)	60.0
1988	SECAL (Industry)	165.7
1989	SECAL (Finance)	231.3
1991	SECAL (Export Dev.)	149.1
1991	SECAL (Agriculture II)	75.0
1992	SECAL (Education)	100.0
1996	SAC I	126.8
Total SACs and SECALs		1,106.0

Source: World Bank Report No. 21409 "Kenya Country Assistance Evaluation" (2000)

Table 2: Kenya: OED Evaluated Sectoral Commitments (through October 6, 1997)

<i>Sector</i>	<i>All loans (millions of USD)</i>	<i>Adjustment amount (of total loan)</i>
Agriculture	460.7	97.2
Education/Population, Health & Nutrition	264.6	100.0
Industry/Finance	468.9	397.0
Transport	336.4	0.0
Water Supply & Sanitation	81.1	0.0
Urban Development	75.8	0.0
Power/Energy/Oil& Gas/Telecoms	355.1	0.0
Public Sector Management	4.3	0.0
Multisector	365.8	365.0
Total	2412.7	959.2

Source: World Bank Report No. 21409 "Kenya Country Assistance Evaluation" (2000)

Table 3: Gates Foundation grants to AATF for “Global Development” (since 2008)

<i>Year</i>	<i>Issue</i>	<i>Amount</i>
2017	Bio Cassava Plus	\$399,918
2016	Maize improvement	\$8,542,920
2015	Knowledge sharing and awareness	\$10,513,020
2013	Research and policy support	\$104,391
2012	Distributing global rice germplasm	\$4,756,466
2012	WEMA	\$52,950,982
2012	Knowledge sharing and awareness	\$3,990,308
2011	Operational support	\$1,000,000
2010	Knowledge sharing and awareness	\$200,000
2008	WEMA	\$35,895,080
Total		\$118,353,085

Source: Gates Foundation online grants database

Table 4: Gates Foundation “Agricultural Development” grants operating in Kenya (separate from AATF)

<i>Year</i>	<i>Grantee</i>	<i>Amount</i>
2016	Eli Lilly and Company	\$2,865,500
2016	Hester Biosciences Kenya Limited	\$1,108,800
2016	Sidai Africa (Kenya) Limited	\$4,485,000
2014	World Agroforestry Centre	\$100,000
2014	Imperial College London	\$100,000
2013	United Nations World Food Programme	\$1,000,000
2013	Tegemeo Institute of Ag Policy & Dev	\$1,704,822
2013	Well Told Story Limited	\$7,891,994
2013	Schutter Energy Ltd	\$100,000
2011	SNV USA	\$7,735,178
2011	Int’l Institute of Tropical Agriculture	\$1,319,661
2011	Int’l Institute of Tropical Agriculture	\$6,759,003
2011	United States International University	\$797,888
2010	Donald Danforth Plant Science Center	\$8,257,560
2010	Food and Ag Research Management Ltd.	\$5,188,438
2009 and earlier	TechnoServe, Inc.	\$7,661,272
2009 and earlier	World Resources Institute	\$570,669
2009 and earlier	The Green Belt Movement International	\$110,000
2009 and earlier	Int’l Fertilizer Development Center	\$25,000
2009 and earlier	Pride Africa	\$748,463
Total		\$58,529,248

Source: Gates Foundation online grants database

Table 5: Gates Foundation grants to CIMMYT for “Agricultural Development”

<i>Year</i>	<i>Amount</i>
2016	\$38,762,127
2015	\$22,674,917
2014	\$23,950,481
2013	\$1,534,550
2012	\$24,637,367
2011	\$33,796,487
2010	\$8,923,022
2009 and earlier	\$86,382,642
Total	\$240,661,603

Source: Gates Foundation online grants database

**Appendix C:
Diverse funding streams for crop biotechnology in Africa**

**Table 6: Gates Foundation grants to develop biotech policy in Kenya
(separate from AATF)**

<i>Year</i>	<i>Issue</i>	<i>Amount</i>
2016	CFTs of biofortified sorghum (Africa Harvest Biotech)	\$200,000
2015	To design and implement biotech policy (IFPRI)	\$5,998,689
2014	Build biotech regulatory systems (Michigan St.)	\$12,224,712
2009	Launch ABNE (Michigan St.)	\$13,294,412
2007	Design African Biosafety Network of Expertise (ABNE) (Michigan St.)	\$1,498,485
Total		\$33,216,298

Source: Gates Foundation online grants database

Table 7: Additional Gates Foundation funding for biotechnology*

<i>Awardee</i>	<i>Issue</i>	<i>Amount</i>
IFPRI	Develop and deliver biofortified staple crops in developing countries	\$118,667,533
Sandra Rotman Centre	Biotech research and publications	?
Cornell Alliance for Science	Strategic communication	\$5,600,000
CIMMYT	Insect resistant maize (IMAS)	\$19,500,000
CIMMYT	Stress tolerant maize (STMA)	\$29,998,202
Total		\$173,765,735

Source: Gates Foundation online grants database and CIMMYT website

**This is more than likely not a comprehensive list, as it is difficult to discern which projects have a biotech component from the brief descriptions on the grants website*

Appendix D:
Interview questions

1. What kind of work do you do (and how did you get into this line of work)?
2. Where were you trained? Do you come from a farming family?
3. Why use rDNA biotechnology for crops?
4. What are the benefits of GMOs to small farmers?
5. What do you think will be the first GM crop to be commercialized in Kenya? Why?
6. How easy would it be for a small farmer to switch to GM maize (technically and financially)? How would they get fertilizer, insecticides, etc?
7. Do you have any concerns with GM crops? Socially? Environmentally?
8. Do you publish your findings? Where? Do you do any sort of training, teaching, seminars, etc. disseminating your work?
9. Who supports your research? How?
10. How is your research used?
11. How and why should GM crops be regulated?
12. How do you feel about the ban? How did the ban come about?
13. How do you interact with regulators and/or politicians? With the media?

Appendix E:
List of interviews

(Listed by institution and title, if available)

2013

1. Center for Biotechnology and Bioinformatics (CEBIB) at University of Nairobi
2. National Biosafety Authority, CEO and Director
3. Kenyan Organic Agriculture Network

2014

4. USDA – Foreign Agricultural Service (FAS – Trade specialist for Africa)
5. Former Monsanto communications director
6. USAID Bureau for Food Security (Washington DC), Biotechnology Advisor

2015

7. Monsanto, Corporate Affairs Lead
8. Growth Partners Africa/Kenya Food Rights Alliance
9. AATF, Communications Director
10. National Biosafety Authority, Director (*same as interview #2)
11. Program for Biosafety Systems/IFPRI
12. Monsanto, Regulatory Affairs Lead
13. AATF, Regulatory Affairs Manager
14. University of Nairobi, Senior Research Fellow (*same as interview #1)
15. USDA, FAS (Kenya)
16. CIMMYT
17. CIMMYT
18. Kenyatta University, Senior Lecturer
19. USAID (Kenya)
20. Cornell Alliance for Science, Director
21. Kenyan Agricultural and Livestock Organization (KALRO)
22. CIMMYT
23. AATF
24. CIMMYT

Appendix F:

Conference presentations, lectures, and open-meeting discussions

(Listed by institution and title, if available)

2013

Open Forum on Agricultural Biotechnology (Nairobi Safari Club Hotel)

1. Professor from Queensland University of Technology

University of Nairobi (lecture)

2. Visiting Researcher at Oxford University, School of Geography and the Environment
3. Director of CEBIB

National Biosafety Conference (Kenyatta International Convention Centre, August 5-7th)

4. Department of Biochemistry (University of Nairobi)
5. Director, National Biosafety Authority
6. Washington State University (Center for Environmental Risk Assessment)
7. Office of the Vice-President, Tanzania
8. Iowa State University
9. National Biosafety Authority
10. Director, ISAAA AfriCenter (International Service for the Acquisition of Agri-biotech Applications)
11. Senior Research Fellow at African Centre for Technology Studies (ACTS)
12. Science Editor at Nation Media Group
13. African Seed Traders Association
14. KARI-Thika (Kenyan Agricultural Research Institute)
15. KARI
16. Africa Harvest
17. WEMA Project Leader
18. CIMMYT
19. KARI-Thika
20. KARI
21. KARI
22. University of Hamburg, Germany
23. International Institute of Tropical Agriculture (IITA)
24. Panel with Q&A: Kenya Medical Research Institute, NBA, Ministry of Public Health, CEBIB, Secretary of Agriculture

2015

Open Forum on Agricultural Biotechnology (Jacaranda Hotel)

1. National Commission for Science, Technology, and Innovation (NACOSTI)
2. Director, Pesticides and Agricultural Resource Centre (PARC)
3. IFPRI
4. Director of Biotechnology Center, KALRO
5. AATF (Regulatory Affairs)
6. Senior Lecturer, Kenyatta University