Re-Assembling Ghana: Diaspora and Innovation in the African Mediascape

By

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Abstract

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The notion of the "network society" has been used to describe world relations since the wide adoption of mobile phones and the Internet at the start of the 21st century. Against this narrative of a seamless global, and democratizing information system, I argue that tech users operating from the Global South interact with information technology via asymmetrical positions of connection, participation and production. For nations such as Ghana (West Africa), whose engagement with the West includes historic and contemporary waves of diaspora, the opportunities and failures of new networking technologies remain poignant. In this dissertation, I document the cyberculture practices of Ghana's "digital diaspora" and homeland "activist developers" who are overcoming this network divide through the use of "tactical" new media. In this work, I emphasize the importance of innovation (novel techniques and practices) over technology (construed narrowly as objects and scientific processes) for the social science of technology. Using ethnographic methods and interviews, I interacted with lay and professional innovators in physical locations (San Francisco, Chicago, Amsterdam, and Accra and Kumasi in Ghana) and via online media (Twitter, message boards, blogs, mobile devices and apps). These digital practices of the translocal resist the enduring notions of Africa as a place devoid of technological innovation, and thus outside of modernity. The documented practices of bricolage, local adoption and relativist invention all re-assemble the social imaginary of Ghana for the contemporary era, and reflect a politics of agency and representation within a growing African mediascape.

This work is dedicated to those who choose to see beyond the horizon.

With love and gratitude to Maxine.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

CHAPTER I:
DISRUPTING THE NETWORK SOCIETY

Introduction

Technology marks both a problem and its solution. This dissertation considers how tech users with roots in Ghana (West Africa) deploy information technology to overcome disjunctive experiences in modernity between the West and the Global South. In the process of adopting, modifying and reinterpreting new media tools, these digital social actors "make society durable" (Latour, 2005) — that is, Ghanaians are overcoming the asymmetrical structure of the "information age" to assemble meaningful networks for empowerment and opportunity via novel technological practices.

Ghana has been a key site for transnational flows since the inception of modernity, with the region's deep entanglement in the Trans Atlantic slave trade, as a site central to European empire-building in Africa, as a leader in anti-colonial nationalism, and in the contemporary moment, as a site of multiple diasporic formations. Despite a strong sense of identification with the nation-state, *diaspora* — framed by Ghanaians as both as an experience of exile, and broadly as Black unity — has been a central motif in Ghanaian identity construction, even amid transformations in technology and globalization that purport to make the world a smaller, and more egalitarian "network society." Disruption, or in the language of Appadurai (1996), *disjuncture*, remains a constant experience for Ghanaians abroad and for those in the homeland negotiating their participation in the world-system via an itinerant social and technical infrastructure.

The repertoire of novel techniques examined in the following chapters are analyzed as new forms of technology that attempt to bridge the sociotechnical divides that persist in these experiences of Ghanaian modernity: These include tools such as mobile phones, Twitter, Web blogs, smart phone apps, as well as the practices of transgressive computer programming ("hacking"), and broadly efforts at information and communications technology for development (ICT4D). These innovations are deployed in practices to make links across diaspora and across an asymmetrical global technical system. They work against the normative habitus of the network-privileged, which prioritizes the Internet as the chief connection technology. Thus, I am framing the West's digital ecosystem as a particularistic arrangement, rather than a universal system, which is embedded in the discourse of the "Network Society," in which "place" has been made inconsequential to data flow (Castells 1996). This is an ecosystem with particular arrangements of electricity, communications hardware, software applications, data practices and a corporate and legal regime, configured for the most advanced industrial and consumer economies of the Global North. As described by my research participants, the uneven linking of this information system to the infrastructure of the developing world forces users to innovate relevant tactics of connection. These asymmetries have their root in the world-system of capitalism and systematic disruptions of colonialism (Larkin 2008), but are experienced in unique ways, as I will illustrate in my description of Ghana's cyberculture. Thus, as innovators and lead users configured outside the digital infrastructure of the West, Ghanaians are engaging in what could be termed *tactical mediation* in order to overcome asymmetries in global flows. This research re-asserts the importance of place in global networks as Ghanaian digital actors must continually negotiate new technology against this asymmetrical arrangement.

These tactics take place amid Africa's *invisibility* as a site of technological production (Burrell 2012). The cybercultures of the West increasingly configure the connected world as one that is "always on" (Turkle 2011), streaming, linking, broadcasting and sharing data via the

consumptive objects of information technology (IT) — gadgets and apps. This dissertation challenges this discourse, as well as the epistemological foundations of our notion of technology. *Techne,* the etymological basis for the concept, has historically been defined as "material practices/arts" (see Chapter 2), against a notion of technology as objects. The transformative element of new technology, therefore, does not lie in tools, but rather in *innovations* which allow the instrumentality of objects to occur. In this regard, Ghanaian and African social and material innovation constitutes modes of technological production — practices that work against the characterization of the continent as a place of abjection, and thus outside of modernity.

I place this dissertation in the context of other Africanist research intervening in the historicization of technology as the province of the West, including Nwokeji's work with Nigeria's oil engineers (2007); Donner's examination of new mobile phone cultures in Kenya (2007, 2008); Burrell's work on Ghanaian cybercafés (2011); Miescher's research on the industrialization in Ghanaian civil society (2012); Osseo-Asare's description of African technoscience and medicine (2014); and more broadly, Bangura's query into African mathematics (2012), and Kreamer's examination of cultural astronomy on the continent (2012).

Innovation is a process in which stabilized *techniques* are disrupted by novel practices that use tools and other forms of cultural production in new ways. In the context of this research on Ghana, the innovations I examine are the practices of Ghana's *digital diaspora,* and the work of its *activist developers* (hackers and civic activists) in the homeland. These projects socially construct new experiences of self (identity), community (diaspora), politics (economic development, political participation), and cultural participation (hiplife, football, news).

These innovations in Ghana's cyberculture ultimately shape the construction of broader global flows, particularly a contemporary *Afropolitan* (Afro-Cosmopolitan) mediascape which serves as a site of solidarity (national and Pan Africanist), cultural renewal, and provides claims to modernity — though this space is also composed of multivalent and asymmetrical networks as well. This new digital public sphere itself represents a sociotechnical innovation, one that ensconces African identity in the contemporary flows of technology and global political-economy.

In looking at the role IT plays in the presentation of self, this work examines the ways globalized media and identities are transforming historic distinctions between diaspora and homeland. The social construction of identity remains a central issue in diasporic movements, practices and exchange: I examine how sociality produced through networked information tools such as smart phones and Web sites raise questions about the importance of place in social identity, particularly for the African diaspora. I am also asking, what role do diasporic agents play in the development of technology in Africa? What are the emerging divides between those with differing modes of access?

While IT theorists have been slow to acknowledge the persistence of embodied social formations online — particularly race and gender — this research contributes to work that analyzes how culture and identity interact with information technology. By mapping both the practices and cultural concerns embedded in specific networks of global exchange centered around Africa, this research hopes to provide a case-study of sorts into the ways the developing world, and its diaspora in the West interacts with new media. [1] Rather than simply repeating the ways new technology furthers a global digital divide, it is my hope that this research illustrates

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1 New Media as a description of digital innovations such as Internet and mobile phones, marks novel practices that enable reflexive media production between at multiple scales, chiefly via information technology. This is also a periodist designation, as new media reflect paradigms of communicative practice that are already in place (Manovich 2002; Chun and Keenan 2006; Lessig 2008).

how IT provides space for the emergence of diverse knowledge systems that link global resources to local values and to individuals: It seems clear that the Afropolitan mediascape is but one of these spaces. My work combines the study of global socioeconomic structures with qualitative analysis of the social and symbolic capital traded in everyday interactions in Ghana, on the Internet, and in diaspora.

The implications of this research for the fields of Africana Studies, in which my work is situated, are broad. Diaspora continues to be a foundational concern in the field, and as the concept emerges in digital practice, the scope of ideas surrounding transnational identity will require further empirical examination. I am also examining the changing context for production and consumption amid globalization for regions of the Global South. The findings would be critical for those working across the digital divide, and in the realms of information systems access, computer interface aesthetics, and technology innovation. While disadvantages remain entrenched, these flows may reflect new epistemic developments in what Boellstorff describes as our current "Age of Techne" (2008).[2]

Ghana: A crucial case study for IT and globalization

Due to its history and national character, Ghana's diaspora stands as an exemplary scenario from which to examine these issues. Acquiring political independence from Britain in 1957, Ghana led a wave of Pan-African influenced liberation movements for states south of the Sahara in that era. Since then, Ghanaians have sought to embody a cosmopolitan heritage as a regional and global crossroads. Ghanaians have strived to overcome conflicting ethnic loyalties, and issues of tribal, colonial and post-colonial governance (Hadjor 1988), while serving as a center of Black cultural tourism and African political leadership via the AU (Gaines 2006; Pierre 2008). Following the celebration of its 50-year anniversary of independence from the United Kingdom in 2007, the discovery of off-shore oil reserves that same year, and relatively peaceful transitions between democratic governments since 1992, Ghana has emerged as an standard-bearer of stable African governance in the contemporary era of neo-liberalism and globalization (Wilson 2004; World Bank 2014).

In the new millennium, Ghana remains central in the discussion of globalization, with Ghanaian diasporic populations representing significant proportions of African immigrants in global nodes such as San Francisco, Chicago, New York, Washington, D.C., Atlanta, London, and Amsterdam — key sites in the contemporary Black Atlantic (Thompson 1983; Gilroy 1993; Holsey 2013).

In Africa, Ghana is a key site for slave diaspora returnees; cross-continental migration from Africa; and the convergence of global markets from the U.S., Europe, India and China. In the field of IT, the establishment of incubators such as the Ghana-India Kofi Annan Centre of Excellence in ICT, the Meltwater Entrepreneurial School of Technology, and Ashesi University College, demonstrate the robustness of technology-driven development in Ghana (Ford 2007).[3] Global IT firms like Google have set up field-offices in Accra to localize software for the

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2 The Age of Techne is described as a post-industrial world-system, contrasted with the pre-digital epoch, the Age of Reason, a product of the European Enlightenment movement (Boellstorf 2008).

3 The Kofi Anan Centre of Excellence in IT is a development organization and facility in Accra that hosts IT classes, development talks, job fairs and international conferences. It was started in 2003. The Meltwater Entrepreneurial School of Technology (MEST) is an NGO started by the Meltwater Group, a Norwegian technology firm, in 2008. The firm states that it strategically selected Ghana out of several South Saharan African countries as a base for its African business and development projects. Patrick Awuah, a U.S.-trained Microsoft engineer, started Ashesi University College in 2002. His vision of the school as a center for African leadership and technology development has garnered him international recognition, and support from the Silicon Valley think tank TED.

African market,4 while Facebook "developer-garages," Python language coding clubs, and tech-entrepreneurship classes for IT activists have also been very active in the capital (see Chapter 4 on "Hacking Development"). Locally, Ghana-based firms such as SoftTribe and Busy Internet have been essential in kickstarting local IT solutions, and startup businesses looking to build businesses within the country and in the Sub Saharan African region as a whole.5

Ghana's profile has also been heightened in recent years by the emergence of a global African media industry, including Web-based news portals; satellite television programming; the global commercialization of *hiplife* (a hybrid of local music and hip hop); Miss Ghana pageants, held locally throughout the diaspora; and partnerships with the "Nollywood" film industry of Nigeria. The circulation of these culture industries has benefitted tremendously from innovations in IT (Mudhai et al, 2009). The use of these avenues for transnational discourse, especially around identity and nationalism, reached fever-pitch with the appearance of the national football team, the Black Stars, in the final rounds of the 2010 FIFA World Cup, and the developments surrounding the 2012 national elections in Ghana. To many in the West, Ghana has become an early 21st century exemplar of development in the Global South (Lupica 2010; World Bank 2014; U.S. Department of State 2011). Since 2008's discovery of offshore oil resources, the Ghanaian economy has grown at an average rate of 8 percent, weathering a financial crisis in the West. In Accra, the expansion can be attested to in the rapid turnaround construction projects, increased public advertising, and inflation in the real estate market (African Development Bank 2012)

For Ghanaians themselves, the concept of diaspora is particularly salient. During the early to mid- 20th century, Ghanaians and other African intellectuals seeking status would move out of the country toward colonial metropoles, becoming so-called *been-tos* (Padmore 1956; (Miescher & Ashbaugh, 1999) Today, speakers of Akan/Twi, the dominant local language in the country's south, refer to Ghanaians in diaspora as those residing *aburokyire*, meaning "abroad," in contrast to those living at "home," *efie*. In my research with Ghanaians abroad and those on the Internet, the distinctions between diaspora and homeland are discussed in a similar way. Diaspora is also used as a framework to describe economic development projects, cultural tourism, continental African solidarity, and a unifying global identity for those with kinship ties to Ghana. Ghana's Ministry of Tourism up until recently was called the Department of Tourism and Diasporan Relations.6 U.S. census figures estimate that there are as many as 100,000 Ghanaians living in the U.S., significant in areas such as Washington, D.C., Atlanta, New York City, the New England region, and Chicago (U.S. Bureau of Census 2011) Though the number of Ghanaians in the U.S. is believed to be much higher due to undercounting, and undocumented residence, typically from visa overstays (Manuh 2005; Yeboah 2008).

The concept of diaspora as it relates to digital interactions is thus fundamental to this research, as the sociality of Ghanaians is also characterized in terms of "diaspora" by members of various Ghanaian online communities. "Diaspora" is an *emic* description of practices of transnationalism expressed by Ghanaian digital actors. Ghana's national identity, in particular, also makes for an important subject of investigation. The discourse of cosmopolitanism among Ghanaians, especially by those inhabiting it's coastal cities such as the capital Accra, builds upon its history as a European "gateway" to Africa, its connection to the Trans Atlantic slave trade, its

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4 See http://sitescontent.google.com/gghana/, retrieved May 2010. Currently the web community is invite-only access.
5 infoDev (2008)."Busy Internet Incubators" Global ICT Department, World Bank, hosted at https://www.youtube.com/watch?v=eYuhRHeClgY, retrieved Sept. 30, 2011. For other examples see, World Wide Web Foundation's MobileWeb Ghana project, http://www.mobilewebghana.org/
6 See, "Ghana Tourism Homepage," retrieved Sept. 24, 2011 at http://www.touringghana.com/mot.asp

role in the foment of Pan African politics during the 20th century, and its contemporary leadership in the African Union (Appiah 2005, 2006; Mohan 2006; Holsey 2008; Shipley 2009)

These reasons ultimately make Ghana a compelling subject for the investigation of diaspora, globalization and information technology. The confluence of these concerns around issues of identity as mediated by IT are broad at the beginning of the 21st century, with implications for migrant populations and emerging global polities, organized around notions of a collective, especially nation-based identity. This research is therefore a case study in globalization, and one that reflects a greater discourse around *mobility* that is emerging from mid-20th century post-colonialism which is not limited to specific political movements, but to millennial practices of the translocal. Whereas globalization has come to mean the loosening of impediments to freely moving information, capital, and people, this project endeavors to examine how a collective identity rooted in an ethno-nationalist homeland is reassembled by its participants online, in diaspora and in the homeland, despite the rhetoric of a "global village" linked via horizontal network flows.

Methodology

Briefly I will discuss methodological approaches towards the various forms of data collection on *digital diaspora* and *activist developers* associated with this dissertation. This project can be broadly framed within the body of interpretive social science, drawing on the methods of sociocultural anthropology and grounded sociology. As with any such research project, building informative and trusting relationships with my research participants has been key to developing an understanding of media use in Ghana's diaspora and in the homeland. That said, participant observation has taken place across several field periods since 2008. Some of these consisted of single-day interactions, some month-long engagements, many of them disjunctive and multi-sited encounters with participants both online and onland.

In doing so I've brought three bodies of data collection into conversation: 1) Interviews and participant observation with Ghanaian immigrants in key sites of the diaspora (San Francisco, Chicago, and Amsterdam), examining specific techniques of connection and discourse around identity as it relates to globalization; 2) Participant observation with expert Ghanaian social media users via Twitter, the African blogosphere, Ghanaian web forums (GhanaWeb and MyJoyOnline, etc.), larger digital media platforms such as YouTube, and to a lesser degree other social media including Facebook and Instagram; and finally, 3) Interviews and participant observation with Ghana's digital elites: IT developers, social media activists and tech entrepreneurs living in the homeland and those in diaspora, who are active in online cultural production.

Developing contacts and research participants in these communities has been an iterative process over the fieldwork portion of this dissertation. I was introduced to the Ghanaian community in the Bay Area via fieldwork with Jenna Burrell, and my list of contacts soon snowballed from this initial project on transnationals to include participants whom I felt would provide greater diversity of socioeconomic status, migration experience, and technology praxis. Those interviewed do not represent a solid statistical sample of Ghanaians such as one might be provided through quantitative studies. Rather the narratives of very diverse social actors around identity and technology use quickly began to shape this research, and a snowball sampling became my primary research tactic for finding key participants in Ghana's digital diaspora. These participants ultimately revealed a repertoire of media tactics aimed at producing innovative connection strategies between home and diaspora.

I interacted with some of these participant networks solely online, chatting with Twitter users, bloggers and forum participants only via the medium itself. Occasionally, I was able to meet active social media users for face-to-face interviews. In all, this project has accumulated more than 30 interviews from a diverse pool of digital actors with ties to Ghana. In this sample, there are a number of what might be described as "experts," what von Hippel would describe as "elite users" (2005) in that they were professionals and activists directly engaged in innovative forms of tech entrepreneurship and social development. I am not arguing that this sample of lead adopters are characteristic of all Ghanaian tech use. I believe this dissertation, however, provides insight into yet another unacknowledged community of tech users who are engaged in social discourse unique to IT development in Ghana. While digital elites in their tactics, many of these actors would not be classified as social elites strictly in reference to their education background, economic status, and kin relations. The cybercultural praxis of these individuals is ultimately compared with data from interviews, statistics and other research on mass technology use in Ghana and its diaspora. Ghana's *digital diaspora* and *activist developers* represent innovative reinterpretations and appropriations of IT across an asymmetrical "global" IT infrastructure. However, the connection techniques of Ghana's digital majority are centered around mobile phone use, which itself is distinguished from the cyberculture of the West. In Africa as a whole, an estimated 246 million mobile subscriptions continent-wide jumped to more than 500 million between 2008 and 2011 (Rao 2011). Current estimates are upwards of 600 million users (Burrell, 2012; Schmidt, 2006).7

As an IT-focused research project, this research is not an ethnography of mobile phones. It does not describe the discrete communications of mobile phone users in detail, as the majority of my informants were typically unwilling to share their text and voice conversations. Often during our casual and formal interview discussions, participants would receive calls and texts from Ghana and diaspora and these typically reflected mundane conversations: Greetings in English or Twi or another shared language; Holiday and birthday announcements; Sometimes romantic exchanges, sometimes fraught personal speech; or coordinations for meetups. Rarely was I privy to long conversations about business or travel plans, requests for mailing items or sending money, or deeply personal conversations about family updates. The examination of this level of discourse is not what this project is about, though others have strived to accomplish this important work (Sey 2011). Instead, during interviews and participant observation, I attempted to document users engaged in a disruptive and innovative practice of digital connection through a variety of techniques. The difficulty of effectuating transnational ties via mainstream IT tools such as the Internet and its applications (email, Web sites, etc.), VoIP, and basic cellular phone subscriptions was typically where most discussions among those in diaspora began. For expert users, such as developers and activists in the homeland, interviews accompanied inventory taking of connection devices, especially equipment necessary to enable businesses to access the Web. From their perspectives, the Western habitus of an Internet-based cyberculture was often contrasted with problematic municipal and corporate infrastructure in Ghana, which was portrayed as an obstacle to local adoption of IT. As described by my participants, these network divides hinder the promise of globalization via technology. It is against these divides that Ghanaian digital actors innovate via tactical media.

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7 This figure should be tempered with the reality that the majority of mobile users in Africa use more than one phone or SIM-card, the microchip embedded in a mobile device which it's unique 10-digit number. This is referred to as "multi-SIM" culture. See, recent reports by GSMA (2014).and Nyambura-Mwaura (2013).

Each community that I interacted with was often the outgrowth of each other. There is some degree of overlap, with contacts in diaspora connected to tech users living in the homeland. But in many ways, each set of digital actors represents unique subsets of Ghana's global cyberculture. As opposed to the work of Rheingold (1993), Bernal (2006), and Everett (2008), the Ghanaians described in the data portions of this work do not represent a single *virtual community*. Rather, through interviews and descriptive practice, I am attempting to describe a continuum of linked technological innovations that contribute towards the construction of Ghanaian identity in the contemporary era. In the work that follows, it will be hopefully clear that these identities, these self-constructions, are not simply virtual (that is online), and thus not *real*. Rather, they are various expressions of a lived reality, lived sociality, and sociotechnical conditions which contribute not only to experiences online, but also to social constructions of the self in the physical world. These self-constructions are not seamless: Identities clearly operate in compartmental and disjunctive ways across platforms. The experience of an "always on" form of connectivity via the mobile phone in particular contributes toward an immersive engagement with technology especially as GPS-enabled location "check-ins" and similarly "tagged" encounters mark physical place as well as connection in the digital age.

In previous writings I have shied away from the term *cyberspace*, as its origin and dispersion through popular culture conjures science fiction imagery (Gibson 1984), in which 3D visualizations of the Internet stand-in for what in reality are very unglamorous connection technologies such as routers, wireless modems, database tables and the plain-text of written code. *Cybernetics*, however, as an engineering theory, is meant to reflect an *interactive* system of relays and signals based on input/output feedback loops — a concept borrowed from theories of brain mechanics (Weiner 1961) Rather than imagine cyberculture as something chimerous and fantastical as a cyborg from *Terminator 2*, or the *Battlestar Galatica*, cyberculture instead points to the enmeshing of computer networks with social feedback systems. These today consist of a range of networking technologies such as mobile phones, email, Web sites, and mobile phone apps, and only more extravagantly, an "ambient," Internet of things such as sensor-driven heating and cooling systems, smart-homes, public works cameras, and RFID chips (McCullough 2005; Yan 2008; Ashton 2009) Cyberculture explored here however accurately describes the entangled feedback of communicative systems with the human practices that give them meaning. The principle tool in the last 15 years in the production of Ghanaian and African cyberculture as a whole has been the mobile phone, many times over more successful as a connection technique than the Internet, despite the pronouncements of cyber-utopianists.

Within the domain of ethnographic fieldwork, three distinct analytical approaches have provided early frameworks for examining the interaction of IT and social life; Sherry Turkle's work has examined how technological objects produce psychological attachment and social meaning for engineers and early Internet enthusiasts (Turkle, 1984, 1995); Miller and Slater investigated the impacts of ICT (fax machines, mobile phones, Internet sites) in constructing global identities (2000); and Tom Boellstorff's work has examined how technology enables the abstraction of the self via tools such as SecondLife *(*2008).

Working ethnographically across these analytical frames for users, tools, communities and individual actors as described in the work above, this dissertation has attempted to highlights a *repertoire* of IT practices that produce Ghanaian sociality via new media. This has required participant observation, interviews and analysis of individual users' media tools (mobile phones), online personas (Twitter handles), and collective expressions in virtual environments (Facebook, GhanaWeb) and real world settings (cultural celebrations). But in examining home routers,

mobile phones, electricity and Internet access, etc., I have attempted to highlight the information ecology (Benkler 2006; Nardi 1999) which co-produces these transnational circuits. I am seeking to document what Kvasny and Robinson, borrowing from Bourdieu describe as an *information or digital habitus* (Kvasny 2005; Robinson 2009), not simply the specific practices of new techniques, but the existing and emerging social structures and relationships in which these innovations are embedded. The production of the technological and the social are embedded in a web of interactions, systems, political-economic conditions, tools and sociocultural phenomena. The tools and their users are not external to these processes, and thus this investigation does not simply focus on users or tools, but rather the social phenomena that emerge from their co-production.

The sites of this research are located across a network itself, with ethnographic interactions with Ghanaians living in the Bay Area, Chicago, Amsterdam, and in Ghana's capital Accra, and Kumasi, it's second largest city. This work includes participant observation at social events, online interactions, and semi-structured qualitative interviews with key participants. In the interview guide, questions center around issues of migration, communication with people in Ghana, use of information technology, and issues of identity. While attendance at social events has been useful to ground experiences in this project, much of the ethnographic data for this report was gathered from one-on-one interviews with participants at their homes, businesses or in public settings.

Participant observation took place in the physical world, interviewing social media participants at small Independence Day celebrations, community BBQs, club parties, concerts, cultural festivals and a church service. On these occasions, I interviewed participants concurrent to and following online observations via informal and semi-structured encounters, and informal focus group settings. In Ghana, I interviewed participants at key technology innovation hubs, cybercafés, university campuses, mobile carrier offices, at newspaper and Web site headquarters, and other private businesses.

This is a qualitative research project, employing multiple methods of data collection (participant observation, interviews, focus groups, online data collection, and content analysis). It is also a multi-sited research project, with a strong focus on participant observation and analysis of virtual spaces and digital social networks; as well as the tools of connection. I examined Web sites, where virtual ties are activated, such as GhanaWeb, a Dutch-owned diaspora Web site, as well as sites for MyJoyOnline, Ghana's top terrestrial radio station in the homeland. In my online encounters, I participated in email, SMS, and message forum-based exchanges. I posted and re-tweeted (*RT'd*) on Twitter, and commented on stories via Facebook and other blogs. I documented discussions germane to my research interests using a variety of screen-capture tools (including Evernote, Tweetdeck and SnapBird), producing images of online encounters that would serve as artifacts for later interpretation. Initial tagging of images was later complemented with keyword coding, and subsequent iterative interpretative analysis. At times this documentation included screen capture via video software, especially during live events such as the 2010 World Cup and the Ghanaian national elections in 2012. I also participated in video interviews on Skype and downloaded exchanges via Google+Hangouts. That said, this project does not engage in "big data" content capture, rather attempts to reflect a participatory, micro-study of online encounters among select cadres of research participants, inline with the basic principles of ethnographic description (Geertz 1973).

Organization of 'Re-Assembling Ghana'

 This dissertation begins with a chiefly theoretical framework, working through key concepts in social science, new media, Africana studies, and the humanities in order to position the techniques of these media practitioners as practices of innovation. Ghana's digital diaspora and activist developers are framed here as tactical media users producing novel forms of technology to effect new identities in an age of technology and global flows. Chapter 2 "Innovation, Diaspora and Asymmetrical Networks" examines theories I am using to in order to re-focus the discussion of technology away from tools and systems, to examine the role innovation plays in material transformation. Here I explore the framework of tactical media as a strategy of innovation, one that works well for users configured outside the dominant global flows of the "Network Society." Included also is a description of the landscape of digital practices in the Ghanaian homeland, which configure transnational connections in diaspora. Chapter 3 "Digital Diaspora and the Social Construction of Ghana's Cyberspace" analyzes diaspora theory and the emergence of digital diasporas in relation to the African continent. Digital diaspora is framed here as online communities, diaspora discourse online, and tactics of connection that enable these new transnational flows. The experiences of diaspora technology users are used to explain the transformations IT has produced on diasporic life. This chapter utilizes ethnographic data from fieldwork in San Francisco, Chicago, Ill., Amsterdam, Accra and Kumasi (Ghana) and many Web forums. Here I explore how digital actors in diaspora facilitate the construction of Ghana's global cyberspace through the practice of digital diaspora. I discuss conditions of connection in diaspora and in the homeland to analyze how these in-turn shape connections between Ghanaians at home and abroad.

 Chapter 4 "Hacking Development" examines *activist developers* in Ghana, using participant observation at various hackathons, IT training sessions, and via interviews with entrepreneurs, developers and civic activists. Against the fledgling public infrastructure, I examine how civic hackers serve as activists, using the language of technology development and Silicon Valley start-up culture as an alternative route through politics and economic development. This data stands in contrast to narratives about Africa's asymmetrical adoption of Western technology. It poses questions about the nature of African "elite" involvement in democratic development. At the same time, Ghana's continued underdevelopment and the distinction between these tech innovators and tech users in diaspora are discussed.

 Chapter 5 "Afropolitan Mediascapes" concludes this work by placing the digital practices of Ghanaians abroad and in the homeland in a larger context of media use and innovation that is shaping the life-worlds of Africa. I describe this new public sphere or public culture as an *Afropolitan* mediascape, applying Appadurai's term for the flows of globalization around news entertainment, art, and communications (1996). Notions of cosmopolitanism as they relate to Ghana are discussed, as are identity issues, the role of new media, and the advancement of this contested discourse around Africa and globalization. The life histories and digital practices of my research participants put in context this new media ecology that includes global distribution of what were formerly national or Pan African media forms (radio, TV, film, literature, etc.). This is an interpretation of the increasingly convergent global public sphere, which is driven by digital practices at the macro and micro level, and in many ways can be characterized as an innovation that meets the issues of African representation in this era of globalization. *Digital diaspora* and *activist* developers are key sources of cultural production in this new global culture. I explore the problems of national identity/belonging this broader *imagined community* poses, and the inherent

R.A. ROYSTON   RE-ASSEMBLING GHANA

9

ways this mediascape continues to produce digital divides, even within Ghanaian and African networks.

Conclusion

As a scholar of the African Diaspora, too often I am struck by how heavy the rhetorical and discursive interventions in the broad diaspora fail to include on-the-ground experiences of Black subjects from the continent (Gilroy 1993). My interest in Ghana as a site of diaspora inquiry stems from West Africa's pivotal role in the creation of the broader African diasporic movements, and how the region, and Ghana has shaped discourse around social formations across the globe. This work I believe pushes research on diaspora in the African context towards a multi-sited empirical analysis, attempting to treat Africa(ns) not as a static or essential cultural entity, but as a dynamic and contemporary place central to investigations of modernity and globalization. Key transformations in technology have been central to the African experience since ancient times, have shaped the development of the Industrial Era, and are now providing key answers to how society will adapt to mobile and pervasive computing technologies, especially in the developing world.

Digital diaspora as a unit of analysis and study offers productive possibilities for development policies and advocacy, in both the local and international arena. It is my hope this research will ultimately further our understanding of how transnational actors and exchanges are shaped by new forms of technological innovation, and how these agents in turn shape material practices in general.

CHAPTER II: INNOVATION, DIASPORA and ASYMMETRICAL NETWORKS

PART I: Theorizing Innovation

Introduction

In the following chapter, I pursue this dissertation's major theoretical intervention in technology studies: I argue against notions of technology that move toward what could broadly be described as "gadgets and apps," i.e. forms of material culture, such as systems and objects often considered external to the human body, the product of pure material sciences. I offer instead, that the critical site of our investigation of new media and new technology should be the process of *innovation*, creative phenomena that allow tools to produce new opportunities for their users and society at-large. Innovative practices (rather than just tools, systems, and processes) reflect the point at which material transformation is achieved. Often this occurs through the introduction of a new technique rather than wholesale invention. Innovation signals that the crises produced in the social construction of materials have been, in the language of STS theory, "stabilized": Meaning that discursive and epistemological arguments about what counts as an appropriate object or technology have been settled (Latour & Woolgar 1986; Bjiker, Hughes, and Pinch 1987).

In the pages that follow, I outline a theoretical approach that re-conceptualizes technology as material practices or *techniques,* as well as novel inventions and mechanical artifacts or processes. But rather than focus on tools or systems as the substance of technology, I suggest that the techniques of innovation are a more crucial site of investigation for social scientists. Today, what is considered technological consists of the material export of Silicon Valley and the consumer electronics industry: mobile telephony, the Internet, LED screens, and GPS instruments, etc. Since the opening up of the Internet during the 1990s and the rise of the ensuing "Information Age," technology has become a central motif in popular and critical discourse, in social science, and in commercial enterprise. The word technology has emerged out of its modernist paradigm of science and development to become a powerful contemporary metaphor for knowledge, agency and power at both the local and global scale (Woolgar 1991; L. Marx 1997; Kelly 1998). It has become synonymous with high-tech gadgetry, computer science, and only more esoterically, the biological and physical engineering, often referred to as the "applied sciences."[8] Indeed, notions of the "Network…" or "Information Society" have proliferated since the widespread adoption of computers in the 1970s (Castells 1996; Turner 2006).

Theorists in the fields of history of science (Williams 2004), Science and Technology Studies or STS (MacKenzie and Wajcman 1985; Pinch & Bijker 1987; Latour 2005), philosophy of science (Ellul 1954), and foundational theorists such as Max Weber (1922), have understood technology to include artifacts such as swords, sewer systems, and written scripts, *and* other processes beyond material goods and machines. While these formulations have been helpful for theorizing, contemporary discourse and the diffusion of the concept to include only *tools*, *practices* and *systems,* opens up the term technology to a high degree of interpretability. Few contemporary empirical accounts attempt to contextualize their analysis with concise definitions (Lemonnier 1992; Castells 1996).

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[8] "Applied science" is increasing being used to name the interdisciplinary biological, physical and engineering programs in recent years. For example, Harvard's School of Engineering and Applied Sciences. The other term in current vogue is STEM, an acronym for Science, Technology, Engineering, Mathematics or Medicine.

Defining Technology

What is technology? Theories typically focus on *tools, scientific processes, systems*, and particularly, new objects and new practices of adoption (Bijker et al 1987; MacKenzie and Wajcman 1985; Rogers 1965). The field of Science and Technology Studies (STS) has spent the better part of 40 years delineating what constitutes technology in social science research. European and American modernist discourse in equating progress with technological advance, and as a justification for their imperial encounters (Adas 1989) historically privileged the tools of Western societies as quintessentially technological. Technology, emerging through a machine legacy was portrayed as the by-product of science and methodological engagement with reason, of which Europe was considered to be its source (L. Marx 1997; Williams 2004). Today, Western chauvinism has largely been removed from most theoretical and philosophical descriptions of technological practice, but the residual bias remains in many forms of discourse including politics, popular culture and some elements of critical theory. Nevertheless, the most theoretically relativist approach towards *teckn̄e or* of what I take to mean a concern over *practices* emerge most clearly in STS theory.

These ideas typically draw on the discourse around *technique, techn̄e,* or *techniks* and it is useful to explore here. *Techne* is explored in classical philosophy by Plato (*Laws X, Timaeus*); Aristotle (*Physics II*) and Democritus, and interpreted broadly can be interpreted as "the practical arts" (Franssen 2009). Weber (1922) provided an instrumentalist concept of technique:

> …there are techniques of every conceivable type of action, techniques of prayer, of ascenticism, of thought and research, of memorizing, of education, of exercising political or hierocratic domination, of administration, of making love, making war, of musical performances, of sculpture and painting, of arrival at legal decisions" (p. 65).

His approach towards the concept likely emerges out of his European academic and linguistic roots, especially via "...the French and German languages, where the words *la technique* and *die Technik* convey a meaning of technology that involves the tools, their uses, and associated forms of knowledge" (Flew 2005: 26).[9] Yet, philosopher Jacques Ellul also approached technology as interpretation of *techne,* giving an extensive treatment of the concept in *The Technological Society* (1954): "Technique is a means of apprehending reality, of acting on the world, which allows us to neglect all individual differences, all subjectivity. Technique alone is rigorously objective." (p. 131)

But within more contemporary empirical social science, a key approach towards defining *techne* emerges from social constructivist theory, positing that human social interests, rather than machines, determine how technology orders the world. This process of social shaping includes not only the tools themselves and their encoded functions (*affordances)*, but also evaluations around what counts as a technology. Social constructivist theory has proffered the idea that technology consist of *artifacts*, *processes* and the *knowledge* associated with these (MacKenzie and Wajcman 1984; Pinch and Bijker 1987). These theorists critique the notion that technology development, when framed as a scientistic endeavor, is engineered to address solely problems in a lab. An accurate, more holistic approach should incorporate how "relevant social groups," be they consumers, regulators, designers, and even non-users, which are fundamental to the implementation of new techniques.

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9 See also Winner (1982).and MacKenzie and Wajcman (1985).

Further positioning the social in innovation, the concept of the *sociotechnical system*, emerging from the history of science, and adopted in anthropology theory, posits the idea that technology is embedded in society and culture. From the perspective of Thomas Hughes (1983) and others, the development of tools do not represent strictly discrete technical processes or attempts to meet extenuating needs. Rather technological practice reflects the co-articulation of the social and the instrumental via a system-wide process. Hughes' classic treatment of the subject identifies social actors such as Thomas Edison as "system builders." In Hughes' historical account, Edison invented the light bulb, devised a system of electrical delivery at the municipal level, and successfully lobbied politicians to adopt this new innovation against the predominance of gas and oil-based power, and other competing but effective schemes. Thus, the analysis of technology should not only be observed in the product design and manipulation of tools, but in their sociopolitical context at the individual, community and structural level. Edison was successfully able to meet society's and industry's needs with new techniques, and maneuver within the sociopolitical milieu to institute these innovations broadly.

A third STS approach acknowledges these two thrusts, but attempts to make instrumentation fully relative. In the Actor-Network Theory, the social constructivist account of technical innovation is juxtaposed with the theoretically crippled modernist view of *technological determinism*. This body of realist discourse with a lineage of thinkers such as Ellul, Heidegger, Parsons, Weber and Marx, and persisting among techno enthusiast and dystopia discourse today, states that the tools and processes humans have created now dictate all aspects of social life.

It proffers that technological development proceeds historically from a teleological engagement with tools along a continuum, from simple to complex organization. In this analysis, human agency and values are diminished with our further reliance on machines and tools (Spier 1970; Heilbroner 1994; cf L. Marx and Smith 1994). The Hegelian historicism that links technological determinism with the narrative of Western modernity has been thoroughly exposed, debunked and shown to be a relativist enterprise (Rodney 1980; Adas 1989; Williams 2004; Latour 2006). Nevertheless, the technological determinist argument that technology, as tools and processes extant to human beings, do impact social life, can hardly be abandoned, and Actor-Network theory attempts to reconcile this idea.

Via the work of Bruno Latour, John Law, Michel Callon, and others, Actor-Network Theory locates the production of social life via the interaction of human and nonhumans (including animals and tools). The classic formulation is "technology is society made durable" (Latour 1991), that is, the interaction between human and nonhuman represents a network, and in this interaction or *assemblage*, instrumental action and meaning are *stabilized* in techniques and artifacts. This stabilization marks technique and artifact not only in the instance of a settled scientific controversy as explained via social constructivism or the countering of an oppositional force as formulated in sociotechnical theory; Stabilization is also recognized in the practice of social science where the researcher can empirically analyze both the actors and the network assembled in instrumentalization of a process or object.

Amid these well documented positions, the question must be asked where does *digital diaspora* "fall"? How does a virtual community constitute an artifact, a process, a body of knowledge or a social actor? Presumably systematic in nature, what is the role of digital diaspora amid other sociotechnical systems? When is the *digital diaspora* present or active, and when not, can it be said to still exist?

Innovation: From Technology to Techniques

Describing digital diaspora, or even diaspora itself, as a form of technology may be a strictly metaphorical move. One could certainly continue to critique the decisive delineations about what *technology is* among STS scholars. One could debunk the theoretical moves of these sociotechnologists as merely academic rhetoric, intended to bolster the theories and methodologies of their disciplines. What may be of most value in these theoretical articulations, without a doubt, may not necessarily be the opening/closure of Western epistemological concepts with regards to universal as well as ethnic material practices. Rather what is important is the systematic observation and analysis of social processes as they encounter and articulate technology.

The theoretical formulations in STS including social constructivism, sociotechnical systems, and actor-network theory, have provided enduring analytical categories for doing research and talking about empirical and archival data concerning tools and their uses. But as Woolgar suggests, reflexivity must also be deployed in these broad aims at theorizing technology (Woolgar 1991). He states, the very concept of technology remains embedded in it's own epistemology and the discourse that reflects it, namely that of social science, which is imbued with the rationalism of *science*. Continuing to deploy the original intents of the "empirical program of relativity" in the sociology of science (Collins 1982a; Pincher and Bijker 1985), Woolgar states that researchers of technology must "...interrogate the web of associations through which our apprehension of technology is ordinarily constrained"(p. 43). Criticizing social constructivist approaches, Woolgar states the object of study, technology, must be *construed as a text*, "... the production and consumption of which is on a par with our own writing and reading practices"(p. 39). Social scientists in sociology, politics, organizational theory and culture who do not self-reflect on their intentions in this research are guilty of objectifying their science: "The interpretivist response espouses a measure of impartiality by proposing that analysis deals with the ways in which readings are done, without prejudice to their relative truth"(p. 41). The researchers' own positionality must challenged, therefore, because it is he who constructs the substance of technology as much as social or material processes. This is a point that Haraway interrogates further in her statement that the description of artifacts or "objects" as extant, independent of humanity, and thus available for science to observe, is a disavowal of the "material semiotic" action performed by what typically is a patriarchal culture of science and imperialistic practices, which have "structured" observations about technology (Haraway 1991: 201). Proceeding further, we must critique the concept of technology, not simply across it's various articulations (artifact, process, system, knowledge, etc.) but the grand idea and indeed the discourse around it.

Digital diaspora as a form of innovation

In this dissertation, I position *digital diaspora* as a material construction of Ghana's global imagined community (Anderson 1991), and also as a social practice (Edwards 2003) consisting of novel techniques — some of which are beyond the technical habitus of ICT in the West. Thus they are *innovative* in the way diffusionists such as Rogers (1962) and Eglash (2004) describe unique deployments and appropriations of tools. As Brinkerhoff (2009) and the African Union have described them, diasporas serve as tools for development, and their digital implementation portends unique and innovative developments in migration and capacity-building in the homeland. That digital diasporas can be simply virtualized transnational actors, ethnic communities, or the public sphere that links several nodes in a network of diaspora,

should be clear from the literature review I pursue in Chapter 3. But more crucial to the framework I am developing, I will consider the phenomena in the following sections with respect to its innovative and *tactical* practices and its materiality. The emphasis again is to highlight the multiple ways diasporic agents are active in the production of technology and certainly in the contemporary discourse about tech that shapes modernity. In Chapter 4, I describe the ways that activists in the homeland (often lead users/early adopters) are pursuing other technological interventions in modernity, germane to the development of the political-economy of the homeland. Together the two techniques represent a social shaping of technology meant to reassemble a techno-modernist imaginary for Ghana in this era of globalization — often against the infrastructural divides that separate the core and the periphery in the Network Society.

Tactical innovation in Africa

In regards to it's role as an artifact, one should consider the materiality of the practice of diapora in technological terms: Virtual communities of diasporans rely on computers, mobile devices, routers, network servers, fiber optics, receiving dishes, power supplies and electrical grids, etc. An entire ecosystem of material goods instrumentalize data connections for community building via ICT. The materiality is recorded as electrical signals and code that produce images, sound waves and other data that are recorded and archived on servers. For the users themselves, the artifacts of telecommunications become necessary components for their transnational links: Phones that access mobile sites or smart apps, for example become the artifacts of diasporic exchange — typically via shipped and transited goods from diaspora locales to the homeland, but also as instruments to make connections. Web sites especially, though nominally electronic and thus lacking tangibility, produce an evocative space through exchange. They are places *to go* to and occupy, as one might occupy a room or a community hall, and at times are talked about as such.

Kwadjo, one of my interviewees, alluded to the materiality of *digital diaspora* while talking about his business — selling and repairing electronics at a small shop in Amsterdam. His Ghanaian patrons often say to him, "I want GhanaWeb," as a way of explaining they'd like to purchase a computer with online capabilities that will access this important Web site. This he provides, by making the Web site their default page on the their Internet browser (Kwadjo 2013). His customers may be speaking euphemistically, but it highlights the ways Ghanaians in diaspora actors clearly objectify digital media as sources of transnational devices. The material presence of digital diaspora is also explained as the use-value of programs such as WhatsApp or Twitter, many of which were talked about as being strictly mediums for connection to Ghana, and not information tools in general. John Elmina who lives in South San Francisco stated that he would not even have used Facebook if it weren't a place to interact with his friends in Accra: It was the homeland actors that provided an impetus for his adoption strategy.

These *techniques* of interaction, including mobile phones and computers become necessary elements to link with others in diaspora or in the homeland. As an imagined community, transnational life becomes digital via these *techniques*; it is the basis for connection and discussions, in the same sense in which Benedict Anderson discusses the nation as being something extant to its physical territory (1991). While I am not arguing that my participants perceived the tools of ITC *as* their diaspora, I am pointing to the material substance of these diasporic artifacts. In this regard, the materiality of digital diaspora is not only the imagined space online, but also the tools that assemble these social relations.

In the next few sections, I move away from instrumentalist notions of technology to lay the groundwork for looking at *techniques* as the fundamental to innovation, and identifying the social practices of digital diaspora — both social and technical tactics of connection — as technologies or *innovations* in of themselves. What links these approaches to the concept of technology is the idea of *tools* and *practices*, and particularly, new objects and new practices of adoption. It seems clear that rather than to continue to focus of these narrow objects and sites, or the broad metaphor of material arts, which illustrate only some of the important conceptual uses of the term technology that social science highlights, the role of *innovation* seems to be a more accurate and interesting site of investigation, and one that can highlight both a non-modernist concepts of material creativity and forms of novelty, technology, that is beyond "gadgets and apps."

In his classic work, E. M. Rogers defines innovation as an "idea, practice, or object that is perceived as new by an individual or another unit of adoption" (Rogers 1962: xvii). This, taken from *Diffusion of Innovation*, moves the discussion of techniques beyond arguments about artifacts, processes, and knowledge – that is, as Leo Marx would say, beyond the "vacuous" definition of technology (1997) – as our description for all forms of material novelty and invention. As Rogers states, "The meaning of an innovation is [rather] gradually worked out through a process of social construction." (xvii) What is particularly useful about this approach to *creativity*, as Hughes broadly describes the term technology (2004), is that, far from the exacting or *scientistic* foreclosure of material practices, newness is recognized in, as Batteau states, the assemblage of "new groups," "new functions," "new topologies" and "new expectations"; "Such recombinations produce new relationships among users and between users and artifacts" (Batteau 2010: 49). Such interpretations have yielded a discourse around *new media*, chiefly from the interdisciplinary approaches to artistic production, digital humanities, changes in law, and communications theory (Manovich 2002; Chun and Keenan 2006; Hansen 2004; Lessig 2008).

Eric von Hippel advances the concept of innovation in a way that acknowledges the importance of *relevance* to such notions of "newness," which should be particularly for social scientists. von Hippel positions the practice of innovation in ways that both open up the concept as a way of describing creativity generally, and in a manner that specifically impacts the African diaspora. In his 1976 study of innovations in scientific instruments such chromatography gauges, magnetic resonance, and other lab tools, the analytic is stated plainly: "We defined (sic) 'major' improvement innovations as those innovations which made a major functional improvement in the instrument from the point of view of the instrument user" (von Hippel 1979: 218). This is an approach to tools and practices that relativizes the *value* of a technique, rather than broadly describing these changes as novel forms of technology, carrying with it the heavy rhetorical and modernist baggage of *technological determinism*, the invention and its application is defined by "local use." Similary, von Hippel's more recent work on "lead users," also makes a strong case for locating the site of empirical social research into material practices not simply at the level of artifacts, but in material practices themselves.

> It is therefore important to point out that, in many fields, innovation in techniques is at least as important as equipment innovation. For example, many novel surgical operations are performed with standard equipment (such as scalpels), and many novel innovations in snowboarding are based on existing, unmodified equipment. Technique-only innovations are also likely to be the work of lead users, and indeed many of the equipment

innovations documented in the studies reviewed here involved innovations in technique as well as innovations in equipment (von Hippel 2005: 30-31)

Utilizing this framework, it is quite clear that technological innovation is taking place in Africa, despite the continued framing of the continent, its inhabitants and its far flung diaspora as perpetually "undeveloped" and lacking in the material trappings of modernity, IT, computers and an "information economy." Viewed from these perspectives, there are obvious ways to describe *digital diaspora* in particular, as a form of innovation. As a tool, a concept and as a process (including its networking devices, encoded data, and their infrastructure), the materiality of *digital diaspora* is demonstrated through its use of co-production through artifacts and of digital content. As a concept and form of tacit knowledge (Collins 1982), these now normalized forms of diasporic discourse (via computers and mobile devices) and its ephemeral transnational dialogue via Web sites and mobile phones, can be viewed also as forms of novel adoption, an *assemblage* across space and time. I explore these techniques in the chapters that follow, looking at how diasporic actors deploy a repertoire of tools to maintain ties to the homeland. The innovative aspects of these practices Eglash (2004) describes as varying degrees of tool making, via "reinterpretation," "adoption" or "reinvention." Ghana's emerging tech industry is also producing innovations via a variety of distinct tech practices and in the redeployment of contemporary tropes of hacker culture in novel ways. This is the substance of Chapter 4, but I will lay the groundwork for examining these practices as technological in the sections that follow.

In Accra and Kumasi, civic-minded computer programmers and Web enthusiasts have deployed expert knowledge and reinterpreted organizing techniques of Silicon Valley's start-up and DIY cultures producing alternative forms of political participation in the statist and ageist political culture of Ghana. This form of *hacktivism* also represents an innovation, and I describe these individuals   as *activist developers*. These and other improvisational deployment of new media represent forms of *tactical media* usurp the cost-prohibitive and structurally asymmetrical information networks from which Ghanaian cyberculture operates.

von Hippel's idea regarding the concept of "lead users" can also be extended to sites in the African Diaspora, where technology practices have accelerated beyond the market expectations of Western developers. This is particularly salient in the discussion of the mobile phone industry, where a destabilized public infrastructure created desire for technological innovation, beyond that experienced or considered as a necessity in the West.

As Donner's seminal work on Kenyan mobile phone culture describes, the phenomena of intentionally missed calls, often referred to as "flashing" in Anglophone Africa, constitutes a *modification* of the intentional phone design and billing system. This form of innovation from the economic periphery hacks the phone's imagined affordance as strictly an audio, sometimes textual device, into one where "beeping" and other forms of signing and sonority are exploited for both instrumental and symbolic communication (Donner 2007). From a broader vantage, consider the localization of the mobile industry driven by an underdeveloped infrastructure: Street salesmen partition pay-as-you go credits ("top-ups"), second-hand device dealers proliferate in public markets, device recharge businesses, and telco sponsored airtime transfer features are a sign of unique and local tech industries on the continent (Porteous 2006; Arunga and Kahora 2007; Donner 2007; Donner and Tellez 2008; Morawczynski and Miscione 2008).

Yet, there are also computer-code based innovations, such as the Sproxil app, designed by a multi-national company with roots in Ghana and Nigeria. The service allows phone users to

text in or take photos of UPC numbers on pharmaceuticals to ensure these are not counterfeit. M-Pesa, a mobile-phone banking app that works across carriers for smart and semi-smart phones, has a hallmark of mobile innovation in Kenya. In Ghana, SoftTribe has marketed an SMS alert system that allows a user to quickly text 10 important contacts in case of a life-threatening emergency. Indeed, a robust SMS culture has developed, that has matured with advertising and text-only social media.

These practices constitute new techniques for connection which the West has largely not implemented due to I would argue is the *stability* of traditional state and corporate infrastructures in regions such as Europe, America, but also Japan and South Korea, and Australia, a collection of network-privileged sites that could be framed as the *Digital North*. The conditions and practices exploited by Ghanaians and Africans working on the other side of this network-divide, underscore what researchers such as Phil Emeagwali and others believe are the first signs of Africa's so-called "leap-frogging" into techno-modernity: a stagist model of development where the incomplete and failing infrastructure of the Global South rapidly transforms into a flexible and mobile "information economy," avoiding the centralized state-apparatus of development which has toiled to adopt Industrial age structures (Emeagwali 1997; Oshikoya and Hussain 1998; Davison et al 2000). While the feasibility of *leapfrog development* has been challenged outside of a few successes in post-Soviet Eastern Europe (Howard 2007), the phenomenal growth in connectivity via mobile phones cannot be dismissed in the African context. Indeed, the latest statistics from mobile phone industry bolster the rhetoric: There are over 250 million mobile phone users on the continent in 2013, having doubled in number since 2008 (Rao 2011; GSMA 2013; World Factbook 2012). While currently only a 37 percent of Africans may use mobile phones, in 2007 that figure was 14.6 percent (GSMA 2013). Africa as a whole has been the world region with the most growth, and fastest rate of mobile phone adoption for the past several years, especially in the area of mobile (broadband) Internet access (ITU 2013c). The "explosion" in mobile adoption (as it is often sensationalized in popular media) is indeed dramatic, considering the relatively stagnant growth in landline telephone connectivity in the same period: Since 2007, fixed-landline telephone penetration has gone down in the developing world from 19 percent, to 13 percent in 2013 (ITU 2014).

In Ghana, mobile providers tout that there are more mobile subscriptions than people, a claim which must be tempered by the fact that most users use more than one phone, or are engaged in multi-SIMing — that is inserting and using more than one subscriber network in a single mobile device (Dahlberg 2013; GSMA 2013).Nevertheless, the ITU10 (2013a), World Fact Book (2012) and other monitoring agencies put the number of Ghana's mobile subscriptions over 25.2 million users (the country's population is 25.4 million people). The NCA which regulates telecommunications for the Republic of Ghana, halves that number, stating that mobile phones have a 49 percent penetration rate (NCA 2014), in order to account for multi-SIMing.

Mobile telephony adoption is just one in a set of digital innovations that are emerging in the context of the African diaspora, and though these represent new techniques or new applications of technology and novel adoption strategies, they produce new social realities particular to emerging conditions of African life as a whole in the 21st century: Examples include the development of virtual nationalism (Bastian 1999; Tynes 2007), Tele-chieftancy (Odotei and Awedoba 2006); Black "blogospheres" or online networks for racial affinity, via Web aggregators such as theRoot.com, AllAfrica.com (Pole 2005; Kvasny and Igwe 2007); as

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10 The International Telecommunications Union (ITU).is the United Nations's media and technology policy agency.

well as scholarly networks such as the Trans Atlantic slave vessel archive hosted by Emory University at Slavevoyages.org.

I position these forms of technological "re-interpretation, adoption, and reinvention" (Eglash 2006) as *tactical media* developments. The notion of *tactical media* was coined in the political performance art context, by members of the several collectives since the 1990s, including Critical Art Ensemble, which describes it this way: "Tactical Media is situational, ephemeral, and self-terminating. It encourages the use of any media that will engage a particular socio-political context in order to create molecular interventions and semiotic shocks that collectively could diminish the rising intensity of authoritarian culture…." (2013).Essential in the production of tactical media art, is the recognition of systematic power imbalance from which the cultural productions emerge. Thus like guerilla or "asymmetrical warfare," these digital tactics are ephemeral, short-lived and context-based as the hegemonic quickly adjusts to quell and incorporate new media innovations. However, outright protests can include, as new media theorist Rita Raley describes: "reverse engineering, hacktivism, denial-of-service attacks, the digital hijack [of Web sites], contestational robotics, collaborative software and open-access technology labs…" among other techniques (2008).

> If there were one function or critical rationale that would produce a sense of categorical unity, it would be disturbance. In it's most expansive articulation, tactical media signifies the intervention and disruption of a dominant semiotic regime, the temporary creation of a situation in which signs, messages, and narratives are set into play and critical thinking becomes possible (Raley 2008).

I use *tactical media* here to describe this ongoing reflexive relationship with connection tools between diasporans living abroad and Ghanaians in the homeland, because these constantly changing techniques reveal the structural impediments to globalization by the West-facing configuration of IT such as the Internet.

Network Asymmetry in Ghana

Despite shared and interoperable technologies, data-networks linking Ghana and the rest of Africa to the Digital North are significantly less than those data networks that connect Europe to the United States and so forth, especially undersea fiber optic cables which constitute 80 percent of the Internet (Warf, 2013). [11] The vast majority of these data connections sites in the Digital North, Korea, and a global cities such as Singapore, Hong Kong. Of the ITU's top 10 Internet economies in 2012, the majority were in Europe, and African countries dominated the "least-connected countries" list (ITU 2013b).

I draw from research in the sociology of science, as one source for what I am calling *network asymmetry.* According to Pfaffenberger (1992), *the principle of symmetry* is invoked during the evaluation of whether an object or process ("stabilized technique") accomplishes a relevant function. Techniques should be evaluated on the basis of their capacity to fulfill tasks or functions, regardless of their wide adoption beyond the community of innovators. Failing to do so, privileges only techniques that have take off because of what could be he describes as nonobjective values: "Of apparently successful systems, we can say only that the system-builders

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[11] See map from Global Bandwidth Research Service (2013), Retrieved at http://www.telegeography.com/telecom-resources/submarine-cable-map/index.html Jan 2014. Reproduced in the Appendix.

have apparently succeeded in bringing to life one out of a range of possible systems that could achieve its goal… Social choice, tactics, alternative techniques, and the social redefinition of needs and aspirations all play a role in the rise of sociotechnical systems" (Pfaffenberg 1992: 499). Thus, I am using the word asymmetry here to describe unequal network relations between actors assembled across systems. This inequality is masked by the rhetoric of equality presumably embedded in systems that relies on networks versus relations structured by institutions and states (Castells 1996).

The essential components of a digital network include a *node* and the *link* between two discrete points. There are other nodes of distinction (routers and relays, etc.) but this constitutes the theoretical imaginary of network design. An early conceptualization of the Internet as one such design. In the 1960s, RAND Corp. scientist Paul Baran advanced a notion of *distributed networks* as an alternative to the current centralized command structure of the U.S. military (Baran 1964, Brand 2001) In these new distributed networks, each node in this new military-computing assemblage could do interoperable functions, facilitating the advancement of the state and military from a number geographic points, and sparing a more hierarchical organization from catastrophic attacks, say, from a nuclear weapon (Baran 1964).

As the notion of distributed and networked computing began to spill over into the mainstream of commercial and government data infrastructure, Baran's thesis about distributed networks was further bolstered by other approaches to networking data for greater computational function, especially in the developing ARPANET, which was the predecessor to the Internet (Castells 1996).This enhanced form of de-centralized organization began to be idealized by futurists such as Stuart Brand in the 1970s and '80s, as bulletin board connections in the nascent Internet began to link small communities of tech enthusiasts and those in the counterculture (Brand 2001; Turner 2006). Distributed networks, as the Internet is often characterized as, today are idealized not only for their ability to connect, but also as a model for hyper-democratic forms of organization. The "flatness" of these networks can be likened to basic notions of mathematical symmetry or equality.

Manuel Castells, who advanced the notion of the "network society" in his work in sociology and power in the 1990s, reaffirms this underlying belief in the co-equalness of points in a network, as he states: "Within a given network, flows have no distance, or the same distance, between nodes." The symmetrical flow of information between points in the network he states is the defining element in this distributed configuration (Castells 1996: 501). *Horizontality*, as Castells describes, is key to the logic of networks, the success of which ultimately depends on the independence of co-equal points in the network, as well as their flexibility and interdependence.

FIG.1
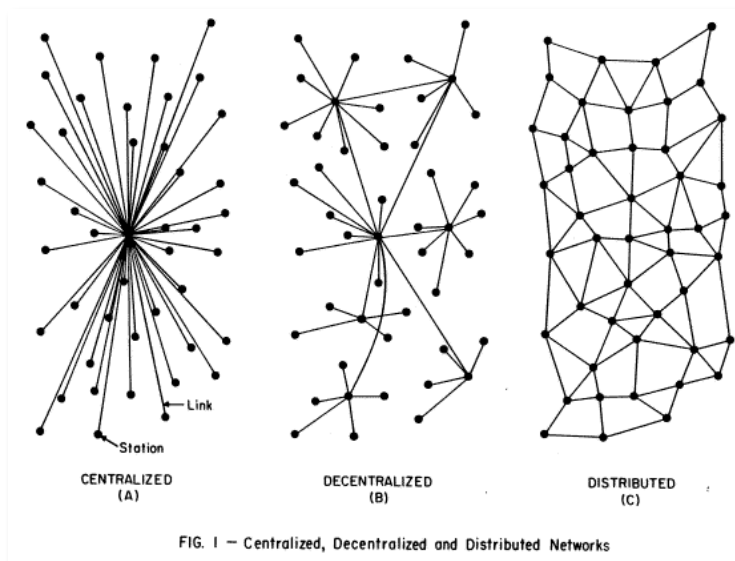
FIG. I — Centralized, Decentralized and Distributed Networks

Baran, P (1964) On Distributed Communications Networks.
IEEE Transactions on Communications. 12(1): 1–9.

The reality is that all networks, regardless of their ability to be distributed throughout a social or technical system, have uneven degrees of power and agency, as they are subjective models of relations: Nodes can be nearly anything, computers, phones, geographic locations, users, or systems themselves. The clustering of power and information even in very extensive and diffuse systems is inevitable, as social network analyst Ronald Burt argues(Burt et al 2013). This may happen between any set of nodes for a variety of social and technical reasons. The development of these self-referential clusters results in network *cores* that possess large amounts of data, yet fail ultimately to link to the greater network.

In reality, the Internet in the West is less distributed than Baran's model of something like a fisherman's net or chainlink fence: ISPs like Comcast and Verizon own key elements of the U.S. network backbone and the distribution centers which individual users of the Internet connect to from technologies such as cable-modem and WiFi. Nonetheless, it is an "open network," and administrators of these sites cannot legally discriminate against data flows from other ISPs and services that utilize their routers and lines.[12] It is one of the key forms of efficiency in the Internet's network system, as less active routers and lines can connect distant nodes easily, rather than communication between nodes taking place sequentially along any one given network path. However, this arrangement, with commercial administrators and ISPs controlling access to the core networks, is much different than the image of every device linked directly to a broadly democratic system, something like an "information superhighway." The deeply connected cable and telecom infrastructure in the United States, along with multiple redundancies from competing networks, do produce, however a sense that as long the electricity and individual connectivity can be maintained, the Internet is "always on," (to reverse our subject-object relationship to it, as described by Sherry Turkle (2011). Key practices of the

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[12] The public debate over this issue is described as "net neutrality."

Internet as experienced in the West depend on this *always* availability as well as high data bandwidth experience of the Net: on-demand video (YouTube, Netflix), video chat (Skype, Hangout, Coursera), streaming audio (Spotify, online radio), social media (Instagram, Twitter, Facebook), digital voice services for home phone use, and cloud-based storage, access and information retrieval.

In this model, it is easy to see how the principles of inequality inherent in other systems of exchange, specifically the *core-periphery* divide at the heart of world-systems analysis (Wallerstein et al 1982), provide yet another way to understand relations between the network-privileged in the West and the network-poor in the Global South.

The Information Age is depicted as a world connected by geysers of data, linked seamlessly by the system of wires and radio transmissions we call as the Internet. Yet, across a structural divide, diaspora-homeland connections for Ghanaians are not well mediated by the large engines of this connection, especially the global telecomm firms. The asymmetry is produced through weaknesses of physical data connection, cost-prohibitive usage practices, and state-centric policies around regimes of information control that strengthen borders in the digital arena via the FCC in the U.S., and National Communications Authority in Ghana.

PART II: The Landscape of Ghana's Cyberculture

Figure 2: Ghana's Internet Backbone

Source: National Information Technology Agency
image:Racom.com "Ghana Javelin project" (2007)

Chart 1

Internet and Mobile Indicators 2012			
Region	*Internet penetration[a]*	*Internet bandwidth[†]*	*Mobile Phone penetration [a]**	*Mobile bandwidth 2M or more[†]*
Europe (EU)	75%	22M	125%	64%
United Kingdom	87%	43M	135%	72%
United States	81%	13M	95%	74%
Africa	19%	0.2M	69%	11%
Ghana	17%	1M	*100%	34%

Sources: [a](World Bank), † (ITU-SOB 2013; ITU-MIS 2013; Akamai 2013)
*WorldBank and ITU count total subscriptions, NCA estimates actual users at 50 percent.

Chart 2

CONDITIONS of CONNECTION in the HOMELAND (Ghana)

Affordances	**Challenges**
Mobile devices (phones, tablets etc.)	*Mobile devices (phones, tablets etc.)*
• Have low-barrier to making international calls.	• Smart-Phones expensive (per GNI)
• High portability of mobile connection.	
• 6 national providers, competition strong	*Internet*
	• High bandwidth/landline access costs are high
Internet	
• Wide availability of wireless Internet (2G through LTE)	• local (landline) infrastructure is weak; landline networks focused on urban areas
• low bandwidth for some wireless Internet	• Subscriber only access to Mobile Web, i.e. "walled gardens/network"
• expensive and limited landline access	• Internet not fast, low broadband interpretation
	• costs of networking equipment high
	• historically, weak access to global Internet
	• few local (Ghana/Africa) storage facilities for data

CONDITIONS of CONNECTION in DIASPORA (U.S. + Europe)

Affordances	**Challenges**
Mobile devices (phones, tablets etc.)	*Mobile devices (phones, tablets etc.)*
• infrastructure widespread — U.S. 5 national providers, competition strong	• U.S.: weak mobile device, portability and access to global networks ("walled garden"/subscriber) (CDMA dominates the market; GSM is available through 2/6 national providers
Internet	
• landline infrastructure strong	
• "Digital North" Between U.S. and Europe, consumers and businesses enjoy the fastest Internet speeds in the world, data use, and bandwidth are the strongest in the world	• U.S.: Expensive to make international calls
	• Costs to individual users high per GNI
• Broadband fast, relatively cheap (per GNI) widespread	*Internet*
• Wireless Internet through mobile services, and public, institutional and consumer WiFi connection points	• Broadband mobile Internet/data expensive

Figure 3
Sea-based Fiber Optic Links for the Global Internet 2014
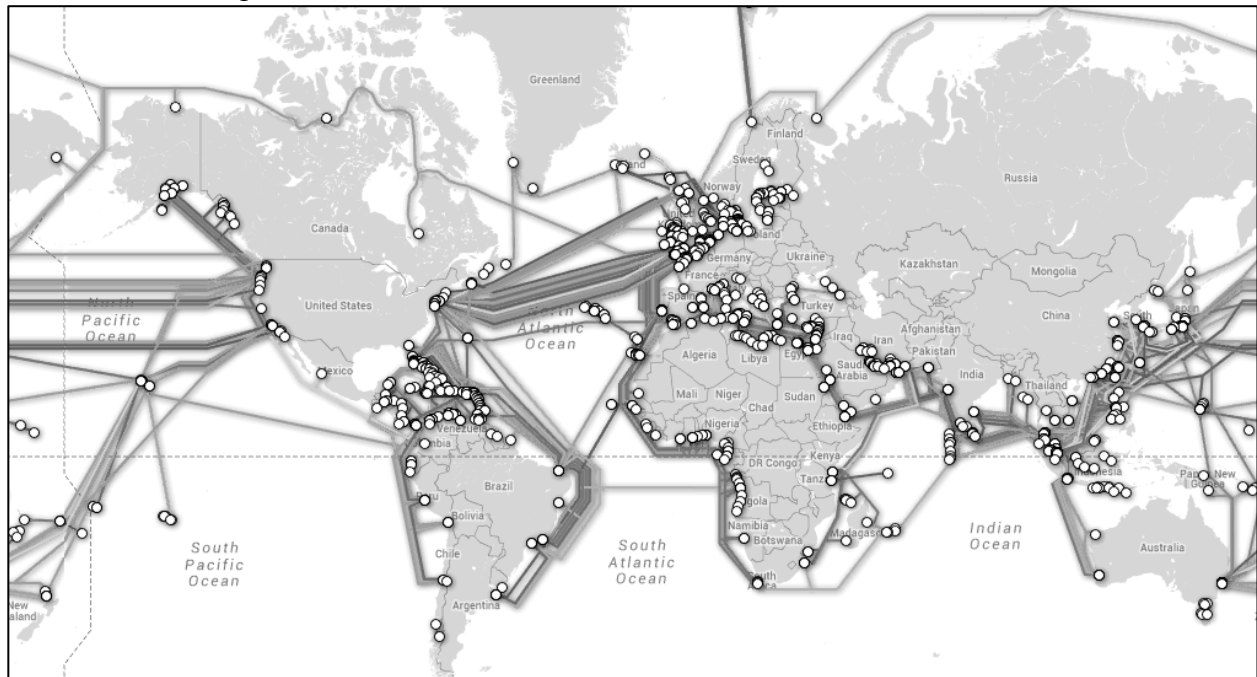
source: Global Bandwidth Research Service, (2014) "Submarine Cable Map" Telegeography.com,
accessed at http://www.submarinecablemap.com, March 2014

A Wired vs. Wireless Web

The concept of a media ecology attempts to describe a set of broad processes and systems that encompass not only the technology described, but the social conditions and political economy in which the objects are embedded. It takes the exponentially abstract notion of Hughes' "seamless web" (2004) and makes connections succinct for a sociological focus, using the language of the natural sciences to describe relations in a digital network. The seamless web encompasses objects (cell phone, laptop, dongle), and traces ties at increasing levels of abstraction toward supply chain and international trade policy. The notion of a media ecology, also popularly used in both tech industry and critical media discourse, highlights the specific tools and tactics interacting in a technological system. From this perspective, we can exam the ways mobile phone connectivity signals a constellation of specific technology practices and examine the tactics within them (Nardi 1999; Benkler 2006; Foth and Hearn 2007; Horst et al 2010).

Today, Ghana is linked to the global Internet via 5 sea-to-land cables (ACE, WACS, GLO, MainOne, and Sat3) and several smaller satellite-base stations (See Figure 3). Exchanges in Accra are able of routing 15 Tbps of data through these ports as of 2013, though the total bandwidth of the nation is calculated at 1Gbps, or 229Mbps per user (ITU 2013a). In 2001, Sat3 was the first fiber optic cable to land in Ghana, porting just 340 Gbps. It was Ghana's first hardwire connection to the global Internet backbone. A massive change took place in 2010, when the Internet Service Providers) MainOne and GLO established two more international cable-connections, giving Ghana more than 5Tbs international bandwidth. The number of users

doubled in the next year, from 7.8 percent in 2010 to 14.11 in 2011 (ITU 2013a). Internet consumers experience much lower speeds, as the entire data bandwidth is leased out to ISPs. Still, Internet penetration in Ghana today is at 17 percent at (4-plus million users), 13 with fewer than a 63,000 high-speed fixed landline subscriptions. Fewer than a 1,000 of these landline connections are 2Mbs or more broadband connections (ITU 2013a). With 8.5 million mobile broadband subscribers (mobile phones and wireless modems), clearly the chief means of connecting online for Ghanaians is through mobile devices.

Given this, Ghana's cyberculture could properly be characterized as a *mobile networking ecology*, as the primary digital networking tool here and in much of Sub Saharan Africa is done via the mobile phone (Akue-Kpakpo 2013). Ghana has a significant Internet network, which up until 2008, was mostly owned by the government owned Ghana Telecom (GT). This network is relatively modest, connecting the "ring cities" of Accra, Takoradi, Sekondi, Kumasi, Cape Coast, and also in a straight-line connection towards other networks in Burkina Faso.

As a mobile media ecology, the Internet of Ghana is not necessarily the same kind of network that administers the Web in the U.S. In the U.S. public and private WiFi drive much of the connection to the Internet, as much as 75 percent (Broadband Commission 2013). These gain users access to the Web via signals received to in-home fiber and copper cable lines, which relay out to regional routers connected directly to the U.S. backbone. In Ghana where the majority of tech users are accessing the Web via their mobile device (phones, tablets, USB-modems), the connection to the network must pass through the cellular towers of an ISP. These are connected in turn connected to the telcos' landline systems and its routers, and then, these in turn relay to broader Internet connections (Blum 2012; Warf 2013).

In contrast to the highly consolidated market for nationwide providers in the U.S. — just 5 national carriers for a population over 300 million — a robust and competitive telecom industry thrives in Ghana. Ghana's mobile phone market is highly competitive, also with 6 national providers in a nation with only 25 million people. According to Ghana's National Communications Authority (NCA), Internet penetration is at 17 percent (World Bank 2013). Telecommunications companies provide both home (broadband) and mobile Internet connectivity.

The six major national firms (Vodafone, MTN, Tigo, GLO, AirTel, Expresso) can easily be considered the public face of the Internet, in a way that is not easily analogous to the situation of access in the United States. This competition is fierce, with price wars often driving traffic back and forth between the services. In 2011, I often saw Ghanaians in the urban core with more than one mobile phone. The explanation to me was each device used for a certain price packaging, or use. For example, a phone exclusively for text messaging (SMS) and another for voice calls. Swapping out SIM cards ("multi-SIMing") remains a common practice. In my most recent trips, though many phones (especially "China" phones) 14 have multiple SIM card slots, individuals can port their subscription across carriers without having to change SIMs.

Ghana's mobile web ecology provides more discrete points for connection, albeit ones within the "walled gardens"15 of the ISP and telecom companies. This key condition of Ghana's

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13 World Bank Indicators "Ghana," http://www.worldbank.org/en/country/ghana/overview Retrieved Jan. 2014; "Ghana" *Forbes,* http://www.forbes.com/places/ghana/ Retrieved Feb. 2014.

14 "China phone" is the colloquial term for counterfeit, imitation phones, typically coming from Asia. Some are off-brand, others are deliberate knock-offs, using the logos of major companies such as Ericsson and Samsung, but use completely generic hardware.

15 The notion of a walled garden refers to a closed communications system, whereby administrators, typically ISPs, offer a variety of content and user-experience exclusively within pre-determined networks which it controls. Apple deploys such a strategy in attempt to create premium services for its users.

Internet, as a mobile network, in my estimation, shapes the majority of online practices in Ghana's Cyberculture. Internet customers in Ghana experience weak and intermittent services in large part due to inability of telcos to bridge data connections over the "last mile" — from their large-scale fiber optic or cable lines, or dish-receivers to that of their clients in-home or office network and wire connections. But the more significant factor shaping Ghana's cyberculture is the reliance of tech users on wireless modem connections to the Internet via mostly 2G (and less so, faster 3G, 4G, LTE transfer bands) [16] via their mobile devices (ITU 2013b). From observations and interview-based evidence, it is clear that the Internet is experienced in fundamentally different ways. The infrastructure at each node in this global network is not symmetrical, not simply because of existing political-economic relations, or low liquid capital in Ghana, but due to the local infrastructure's networking strategy, and broader regime of connection to the global Internet.

Mobile devices are carried on the person and also are used to effect often one-to-one cellular voice conversations. While a laptop, desktop or larger computer servers work as storage devices for large amounts of data, the location of these can typically be traced to a specific geographic site and IP address. A mobile phone may provide a distinct IP address, but it is constantly in transit, and constantly transits with its owners. Yet, the mobile web primarily acts as an additional interface layer to the Internet. In addition, while smartphones such as Apple's iPhone, Samsung Galaxy series and Blackberries offer robust connections and programming to the Internet, it is very difficult to produce something like Web site, let alone host one from these devices. 3G and faster data connections for mobiles account for 38 percent of all mobile broadband, but 3G mobile phones only account for 12 percent of this figure (GSMA 2013; ITU 2013a). Smartphones are not also the typical mobile devices on the mobile Internet (less than 20 percent) in Ghana. Instead, the primary data being stored via these mobile devices tends to be personal information, communication and texts, i.e. the contents of a phone.

Applications such as Facebook, Twitter, and WhatsApp, are key technologies for mobile devices, but the content created via this software also is stored on Web servers that live on the broader Internet. Direct content creation and server hosting on mobile computing devices could ultimately lead to the mobile Web becoming larger and more important for Internet users in Ghana and elsewhere, but this is currently not the practice.[17]

The result is that the Internet is not "always on" in Ghana, making much of the activities of the seamless Web unavailable. Bandwidth is commonly low — less than 2M nationally, which is slower than broadband 3G (ITU 2013a; ITU 2013b). Calls by organizations such as the Ghanaian Internet Service Providers Association (GISPA) and the UN's International Telecommunications Union (ITU) to increase it have been consistent for a decade. As a whole, Africa's mobile broadband consumption grew by 40 percent since 2008, according to the ITU, but bandwidth access lags far behind the Digital North (see Chart 1) (Akue-Kpakpo 2013). While the Ghanaian Internet provides for discrete connections to the Web, the network itself is not an open system. Run principally by private ISPs and telecoms, access to differing nodes

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16 3G is the industry name for "3rd Generation" radio-relay technology for data-traffic on mobile devices. It is significant in that the bandwidth for this form of data transmission is wide (potentially 2M and higher).which allows devices to carry rich voice and video more quickly than previous generations of mobile phone technology. In increasing order of data load, mobile transmissions can be labeled 1G, 2G, 3G, LTE, 4G, and 5G.

17 The mobile web, like terrestrial Internet, is a system made of connected processing units, protocols and data. Unlike the hard-wired Internet, there is little native content. The World Wide Web, the visual interface for applications like Facebook, Google, and Wikipedia, is the frontend of a series of databases and servers. While Web pages for instance can be modified to resolve correctly on multi-format devices like phones and tablets, the data still resides on static processing centers or remote servers. The Mobile Web is produced mostly through coding language that interprets the Internet. Currently its access and production features are limited to enhance resolution on small screens and not content production.

throughout the world and within Ghana is regulated by transiting fees as data and requests for data move between proprietary networks (Warf 2013).

As a discrete service (with little institutional, and 'free' public WiFi), it is also a private service. The Ghanaian Internet is expensive and a cumbersome endeavor, and several recent studies bear this out (Cotrell 2013; GSMA 2013). Urbanites and elites are typically privileged users. The rural populace, 50 percent of nation, is outside of this infrastructure. To connect back home, Ghana's digital diaspora relies on Western infrastructures and this communication privileges communication within the Ghanaian diaspora in the West. As is evident from Web traffic and postings that I have observed on GhanaWeb and data-intensive social media such as Twitter and Facebook, the diaspora is more connected to itself via the Internet, than it is connected to the homeland online. GhanaWeb CEO Roberto Bezzicheri confirmed as much in an interview in 2013: He said 60 percent of the site's traffic comes from the U.S., followed by U.K., the Netherlands, and then Ghana (Bezzicheri 2013).

The Ghanaian end-user accesses landline Internet typically via legacy copper wire connections once used to carry telephone signals ("DSL"). Fiber optic line installation and use by consumers was typically rare until recently. [18] Copper telephone infrastructure often suffers from being in an ever-worsening state of efficiency since the 1980s, and so problems are guaranteed.

Other technology used to deploy Internet connections include large radio modems which beam data to consumer receiver towers from line-of-site relays on a subscription basis. These relay systems generally transmit at lower bandwidth than landline connections, and are susceptible to environmental and physical obstructions, such as inclement weather.

Internet users in Ghana can access the network via landline subscriptions, or cellular 2G and faster data signals offered by the telcos. Mobile Internet connections are often achieved with USB modems called "dongles" that plug-into desktop and laptop computers. Mobile phones, tablets, and some laptops have built-in cellular modems. Firms such as Busy Internet, MainOne and Ecoband, among others, provide enterprise and institutional Internet service. WiFi hotspots are not plentiful outside of a few carrier storefronts, cafes, business centers like Busy Internet, and more recently (2013) co-working hubs like the iSpace or HubAccra. For the individual user, despite the dominant connection strategy to the Internet being a mobile phone or wireless modem, public and free WiFi is hardly a reality. My fieldwork in Accra and Kumasi and interviews with users in Ghana bore this out. On the busy international corridor, Oxford Street (Quayson 2010), WiFi routers of businesses routinely sprouted up on my mobile devices, but these seldom yielded a usable data connection, including at telco retail centers such as Vodafone and AirTel.

Despite the myriad of connection techniques, Internet remains unreliable and intermittent for the end-user, including small-scale tech firms. Most of the *digital elites* I talked with during trips to Ghana between 2011 and 2013, described a constellation of connection strategies that included the tethering technique outlined above. In addition to this, the avid Internet user, the entrepreneur and small businessperson would double and triple up on their ISPs. My contacts complained that services would degrade for different carriers as the day progressed, some experiencing weeks of unexplained data lag. The redundant ISPs would also users to switch between services depending on the time of day, and their location throughout Accra. One of my

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18 In 2013, a new commercial ISP, Blue, has begun wiring streets and businesses in central Osu (Oxford Street).with newer fiber optic lines. Other commercial ISPs including MainOne, InternetGhana, and Ecoband, proving radio-based, WiMaxx and satellite Internet access.

research contacts complained that when Internet access became problematic for days on end, he would relocate to other cities in Ghana, even going to his colleagues' offices in Kenya for reliable access.

Internet for a network engineer in Ghana requires a tactical approach towards staying connected. Their repertoire of connection includes a least one smartphone, possibly another "feature" phone, and among network engineers the tools of a network engineer: commercial grade router, servers and multiple Internet connections. It involves a constellation of technologies including: A commercial subscription to a reliable service provider via a wired landline and additional ISP accounts enabled through wireless services via dongles. The ISP-delivery options can include radio-tower receivers, which is particularly sensitive to atmospheric and other environmental interference. Latency and interruptions in Internet connections is a fact of life in Ghana. Industrial routers, laptops, tablets, the tech entrepreneur and network engineers who frequent hackathons, app contests and personal capacity-building events like BarCamp are at the pinnacle of tech users in the nation and perhaps among a few thousand such skilled technicians on the continent. "The guys from California, they don't know the African market. They don't understand it," says Herman C. Hesse. "Internet is the least of our access issues." (Hesse 2013).Still, other infrastructural practices in Ghana produce conditions of network asymmetry.

Costs

The ITU estimates that Internet connection costs amount to as much as 9 percent of GNI (Gross National Income) for Ghanaians, closer to 1.5 percent in the U.S., and less that 1 percent of GNI in Europe. Stable landline connections are expensive for the average Ghanaian: The national medium income (GNI) is US$3,500, about $10/day. Twenty percent of Ghanaians make less than this, living below the poverty line (World Bank 2013). While mobile devices can cost as little as US$30 (and cheaper in the second-hand market), high bandwidth smart phones routinely go for US$200 and upwards. While elites can afford expensive data connections, Internet users in Ghana are clustered around urban locales. Yet, landline Internet remains cost-prohibitive for the majority of users in Ghana at $36 or more monthly charges, plus installation fees. Mobile Internet access via subscription services or high-bandwidth cellular connections are often touted as the solution to low Internet penetration in Africa in general, but cost infrastructure for ISPs is still relatively high. For the region as a whole, the ITU estimates the price of mobile broadband for a pre-paid handset (500M plan) in Africa accounts for 38 percent of GNI, versus 1.1 percent in Europe; Pre-paid broadband Internet for computers (1G plan) account for 58.3 percent of GNI, versus 1.9 in Europe (ITU 2013c).

Technopolitics and Ghana's Internet Development

Against the globalizing rhetoric of the Internet, border politics continue to re-inscribe the importance of place in Ghana, as described in succinct detail by Wilson (2004), Osiakwan and Foster (2004; 2007) in their accounts of the history of Ghana's Internet. National Computer Systems (NCS) Ghana's first commercial ISP, began as an early competitor to the state-run Internet service, Ghana Telecom (Wilson 2004; Foster et al 2004; Osiakwan 2007). According to interviews with "information champions" such as Nii Quaynor, the founder of NCS, firms like his were only able to enter the market through political connections and deft positioning of largely unknown tools such as satellite- to earth station digital services, avoiding interference by

regulators who were largely unfamiliar with the potentials of digital technologies. [19] The government of Ghana was more focused on limiting competition for access to its state-developed Internet backbone to the outside world: GT and a private interest Westel had an exclusive right to port to the global Internet backbone from 1996 to 2002 (Osiakwan 2007). Though international email connections had been established in 1989, Ghana Telecom and Westel controlled the majority of access to the fledging, graphic-less Internet and nascent mobile phone airwaves.

According to Wilson, policy could not keep up with innovation, and soon providers like NCS through political connections was allowed to operate a satellite receiver and link users in Ghana to international Internet networks in the U.S. and the U.K., at meager speeds of 9600 bits-per-second (Wilson 2004; Foster et al 2004). These sociotechnical maneuvering helped established a culture of enterprise in Ghana's early cyberculture, and it quickly became one of the leading African nations with wired and wireless data-connections to the broader world. In 1995, Ghana was the first West African country, and second in Sub Saharan Africa to access the emerging TCP/IP protocols, the interconnection coding and language that mediates data connections between servers on the Internet (Tevie et al 1996; Internet Society 2011). This was largely due to Quaynor's ingenuity, experience as an engineer in the U.S., and his personal ties to government (Wilson 2004).

Technopolitics again reportedly came into play with the entry of Nigeria-based Globacom into the Ghanaian market in 2008. The recent case of Globacom or GLO, a telco provider based out of Nigeria, yields another example of the role of politics in establishing Internet networks. Beginning in 2009, billboards, radio and television advertisements began touting the coming of a brazenly "African" Internet provider, among the cadre of dominant multinational telcos in Ghana. While the firm was awaiting the authority to open storefronts and offer data-deals, it paid Ghanaian celebrities to drum up support, including hiplife rapper Reggie Rockstone, members of the Black Stars national football team, as well as film, TV and fashion icons to promote the service. News reports were rife with rumors that GLO's business was stalled by political brinksmanship for several years and pressure MTN, despite strong financial backing and strong local technical expertise.[20] This incident again illustrates the role of political-economy on what are otherwise imagined as seamless, and purely technical systems for connection. The ultimate ability for GLO to bring data into Ghana via its networks, and cell towers, despite years of market preparation and advertising was a political decision (Nworah 2006).

Implications For Diaspora Connections

The transnational nature of Ghana's digital actors positions them in a space of necessary innovation: The dominant connection strategies and repertoire privilege the techniques of mass adopters rather than that of lead users in Ghana. For migrants in the U.S. attempting to link back home in the early days of the Internet (1990-2000) — especially in the era before the Internet went visual with browsers such as Mosaic, AmericaOnline and Yahoo! — there were almost no

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19 In 2008, the British-owned telco, Vodafone, entered into an exclusive agreement with Ghana Telecom (GT) to purchase the backbone for Internet and landline phones in Ghana. A new firm Vodafone Ghana, was created in which GT would have a minority stake. This effectively privatized the national backbone (Osiakwan 2007).
20 Cellular News (2011 Nov 17). "Globacom Delays Ghana Network Launch Again," http://www.cellular-news.com/story/Operators/51853.php Retrieved April 2012; ITU (2011 Aug 15). "Ghana: Are you going to GLO my way? Asks government."; alj_harem (2011 Sept 11). Ghanaian Government Gives Ultimatum to Globacom. [Msg 1] Message posted to http://www.nairaland.com/757222/ghanaian-government-gives-ultimatum-globacom

"best practices" from which to effect a transnational media space attenuated to their cultural and institutional needs.

Instead, colluding among others in diaspora, technologists in the homeland, and through experimentation, trial and error, and "learning by doing," have created new media, and new techniques of connection. To actualize robust digital connections against this require a tactical if not outright subversive approach. As you will read, to send tools such as U.S.-bound Voice-over-the-Internet (VoIP) devices to Ghana in order to give users their U.S. telephone numbers is less an outright system hack, than a tactical form of reinterpretation, discovering latent features in an already existing tool. Appropriated for the Ghanaian setting, however, VoIP is not always the best strategy, as it requires a stable Internet connection, which in the homeland is neither cheap or dependable. Thus the impact is highly contingent, and its deployment tactical. Other digital actors in diaspora utilized calling cards, and entire industry around these and black-market 800 phone numbers developing in the early 2000s to accommodate traffic from the West to Ghana. Still, these ventures represent mediation outside the normative characterizations of tech use both in the U.S. and Ghanaian context. To connect globally from the U.S. to Ghana and back again, despite the existence of a "global Internet" requires the invention of novel and undiscovered techniques.

Thus the network infrastructure, in a sense, then "configures the user" (Woolgar 1991) in both Ghana and in the U.S. Class, social network and knowledge about technology influence tech practices including adoption and production (Robinson 2009). Organized as industries around nationalism, it requires the work of a bricoleur in diaspora to bridge connections across deep network divides that privilege national boundaries, even in the networking of the World Wide Web. Currently, digital actors in diaspora and lead users in the homeland (*activist developers*) are engaged in bridging the gaps in information (communication, knowledge, opportunities) amid global digital (social) divides.

Spaces of Innovation: CLCs, Cybercafes and Tech Hubs

In the early 1990s, the emerging ICT4D (Information and Communications Technology for Development) field proffered computer-learning centers (CLCs) as a catalyst of economic development and infrastructure advancement for Ghana and other under-developed nations (Akakpo and Fontaine 2002; Falch and Anyimadu 2003). USAID helped to fund some of these early centers in Ghana, leading to an explosion of NGO supported communication centers throughout Ghana. Early Internet connectivity also helped to popularize these spaces. As the 1990s transitioned to the 2000s, CLCs soon gave way to outright "cybercafes." By some estimates, with over 700 so-called Internet cafes in Accra along, Ghana became famous as a center for the new information economy in Africa (Burrell 2012). On the ground, many of these cybercafés were nothing more than rows of PCs sharing print services and Internet access over dial-up modems. By my first trip to Ghana in 2011, many of these establishments had closed or had turned into unsavory spots for young men turning to 419 scamming, locally referred to as *sakawa*. In some places, these modest PC hubs were being rebranded as hotspots for Vodafone and other telcos, but connectivity even at these sites was hardly as robust at the retail offices of the telcos in areas like Osu or the rapidly developing malls and retail centers near Kotoka International Airport. But the cybercafés phenoma had still taken off nonetheless. At KNUST, and the University of Ghana, Legon, computer centers or cybercafés were still effective places to go online, work on projects, surf the Web collectively and individually.

Busy Internet was started in 2001, as one of the first cybercafé/business hubs in all of West Africa. Public attention of it's success spurred a larger Internet café boom, but this is business is also singular. It connects to the global Internet via satellite connections to networks in the UK, offering private Internet connection to businesses on-site and via remote subscription (radio-enabled). Busy maintains several layers of redundancy for power and data storage backup. There are private offices as well as co-working spaces on site, print services and Web surfing arrays. Busy is a regular stop for transnationals who've heard about the success of the ISP, and there is a satellite cybercafés at the burgeoning Accra Mall near the airport. It's former manager, Estelle Akofio-Sowah is now the country lead for Google-Ghana.

Institutional developments also spurred the growth of publicly available Internet in the early 2000s. The Advanced Internet Technology Initiative, also known as the Kofi Anan Centre for Excellence in ICT (AITI-KACE) was founded as a government NGO in 2004, meant to spur IT business development, computer training and international partnerships, with financial assistance from the Republic of India. Like the numerous Indian-run tertiary schools for ICT training in Accra, KACE's aim in part was to give Indian firms greater access the Ghana's emerging IT industry. KACE hosts the physical hub for national Internet backbone, the international exchange router (IXP), given its role as a neutral broker between Vodafone Ghana and other ISPs in Ghana. The NCA operated out of the building for a few years. One KACE's greatest roles is encouraging entrepreneurial development and local innovation. Several hacking events and contests have been hosted at AITI-KACE, located near a series of national government buildings in Accra-proper, including the annual Top App awards. While its programmatic influence has waned, the center also has remained active in other computer ventures, hosting some Africa's only supercomputers, used to crunch data on disease and illness, in partnerships with networked research centers in Japan, India and the United States. Ashesi University College started in 2004, and the Meltwater Entrepreneurial School of Technology (2008) were beginning to gain reputation for the quality of their graduates, and the sophistication of their facilities for SiliconValley-style incubators, even as Kenya's iHub, started in 2010 by Erik Hersman, has become among Africa's most well known centers for start-ups and entrepreneurial innovation.

Between 2012 and 20013, Ghanaian versions of tech incubators as spaces where experts, young hackers and non-technical entrepreneurs could gather and work took off, and at least four large innovation hubs were started in that time frame, including Mobile Web Ghana, AccraHub, iSpace and the mFriday lab located near KNUST campus in Kumasi. Co-working tech hubs represent the latest iteration office-centers where IT entrepreneurs mingle and foster project collaboration. These spaces are increasingly receiving corporate support, and along with the trend towards social entrepreneurship in the development industry, typically are charging membership fees to sustain their spaces. In contrast to the classic Internet café of the early millennium, Internet connections at these sites are very strong, though there is little in the way of public hardware, laptops and computers for drop-in use. The centers are attracting a broad range of professionals and creative workers. At the iSpace, the 15 paid members included independent business people working in fashion, the film industry, catering and publishing, as well as students and foreign nationals looking for cheap office space in Accra.

Given these prospects, the work of a Web developer is hardly glamorous in Ghana. While the market for cool apps and cutting edge programming is significant, it hasn't grown that much in the last five years, since mobile phone adoption peeked in 2010. Programmers and developers still find their most reliable work as network engineers and systems administrators for banks,

large NGOs and the government. Small entrepreneurs are typically ginning up enterprise solutions for ecommerce or internal Web systems ("ethernets") for small but well-funded clients (foreign construction and research firms in oil, government contracting, telco and other infrastructure industries). Startups are emerging, but still number under 50, and while business development hubs are proliferating, their trajectory is likely to mirror the rise and fall of both the CLC and the cybercafé. The reality is that as skilled and enthusiastic as Ghana's new cadres of developers are, the actual IT industry is hardly self-sustaining, in part because it has not figured out how to capitalize on the mass market whose chief means of interaction remains simple feature phones, SMS, email: Between the digital elites producing apps and paying for broadband access and the networked majority, there is a cybercultural disconnect.

Impact of Network Asymmetry on Ghana's Cyberculture

Pro/sumption Divide

However, this is not the whole story. The consumption and the production of Ghanaian online content benefits tremendously from content providers in the homeland: Web site developers, bloggers, Social Media users, streaming video and music sites, etc. via networks such as BloggingGH and developer communities on Google+ like DevCongress (more in Chapter 4). Yet, the infrastructural asymmetry persists in that even these-homeland based Web developers are relying on infrastructures (cloud storage, streaming, remote servers, services) that are based in the West. In some ways, this is a reprise of colonial informatics (Ziegler and Asante 1992), where the circuits of discourse travel back through the West to reach the Ghanaian digital republic, wherever they are situated. The online experience of this is somewhat masked. A user of Web sites such as GhanaWeb or MyJoyOnline, or Ghanaian movie channels on YouTube, would not necessarily ever know that these key Ghanaian sites are hosted outside the country.

Key Web sites of interest to this research include GhanaWeb and GhanaMusic, which despite having content editors located in Accra, are known to be transnational Web sites based in Amsterdam and New York, respectively. However, during this dissertation work, I researched the IP addresses of key homeland sites such as MyJoyOnline (Joy FM's Internet home), PeaceFM, OMGGhana, GhanaSoccerNet. All of these host servers for these Internet companies are all located overseas.[21] A 2012 report from the South African telecom Liquid mobile provides a regional perspective: Of the top 25 trafficked Web sites by African Internet uses, only 11 were hosted on the continent; The top 7 sites were located entirely outside Africa (Liquid 2012)

Ernie Ofori, an IT development director at AITI[22] described this structural issue during a visit in 2012 to Ghana's national development agency. Ofori states that the vast majority of Web sites created by Ghanaians even in the homeland, "live" on computer servers located in the West. "We are doing more social media, but in terms of actual data, no we're not hosting. Our content production is weak. Our contribution to the Internet is so small. Right now we don't contribute. Cost is high on the download side, even not necessarily on the upload side. But we have a lot to contribute" (Ofori 2012). Part of the issue, Ofori explains, are justified concerns over the instability of the national electric grid. But lack of confidence in Ghana's fledgling web industry

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21 Using a "network utility" program, I sent "ping" messages to these sites, locating their IP (Internet Protocol) addresses. Then using several publically available domain name registry sites such as Site24x7, I entered the numeric IP addresses to retrieve "WhoIs" information about ownership, which the Internet Corporation for Assigned Names and Numbers (ICANN) requires for Web sites. The above sites and many more were hosted in countries such as the U.S., Canada, and Germany.
22 The full name of the NGO is the Advanced Information Technology Institute at the Ghana-India Kofi Anan Centre for Excellence in ICT.

was also to blame. Until 2010, he explained the government relied on the national telecom companies and firms in the U.S. and Europe to monitor data traffic on Ghana's Internet backbone and the mobile Internet.

e-Commerce

Ghana's services industry, currently accounting for 50 percent GDP is growing, and including white-collar work and business-to-business commerce (World Bank 2013). Indeed, as my contacts remarked, the Internet is becoming indispensible to non-elite Ghanaian businesses such as taxi drivers, school teachers, banking, and even in some cases farmers and agriculture workers (*"We are consumers of technology. We use it to facilitate what we already do…"* one Ghanaian tech professional explained to me [Swaniker 2013].)

At the same time there is little by way of an Internet economy: Google Trader, an e-commerce marketplace pushed locally by a Ghanaian management team since 2011 floundered after 2 years of promotions. While SoftTribe promotes its own online marketplace for Africans, ShopAfrica53, Herman Hess the company's CEO said in a private interview that he believes that ecommerce is currently not profitable: "We're not there yet, need to take 10 years. Online payments systems are not perfected. There will be no innovation if we're focusing on the upper echelon of the market. If you want to make money you need to focus on the population that is making GHC4 a day" (2013). Still others like Alex Adeji, CEO of the content company smsGH's, stated that he believes that mobile phone consumption is the reason the service sector in Ghana is growing (Adeji 2013). An industry report from the mobile providers association states that the mobile economy has 6 percent towards Africa's economy as a whole, over $66 billion (GSMA 2014). While a rising middle class income and steady GDP seem to undergird this growth (at 8 percent or higher since 2010), the evidence of IT's growing impact on the economy in Ghana is attested to via the growth in advertising in just the three years I have visited the country.23 The endorsement business has taken off since, with celebrities pushing everything from yogurt to clothing to soap. But the main advertising promoters have been telecoms, and their branding is everywhere, with both television spots and sponsored-programming. Endorsements have already transformed the countryside in the past decade: Riders on the roadway to Kumasi from Accra would be greeted by an increasing calico of red, green, yellow homes and businesses, the closer one gets to each transit stop (The practice became so intrusive that the government began banning this form of advertising.)24

Looking to the success of M-Pesa (Kenya), a mobile money system in wide circulation in Kenya and East Africa, telco firms have attempted to make "online wallets" and do mobile banking for their users. Users of these in-network money systems can send credits, at-times redeemable for cash, to other users who also have mobile money accounts. The closed-nature of these systems, however, has contributed to their lack of adoption. Mobile money via the telcos has not been widely adopted in Ghana, though the potential user-based is great, typically because it is hard to retrieve cash funds or even send money as it is in the form of phone credits. My research participants uniformly rejected these schemas as true e-commerce, and generally complained bitterly of this system of online commerce. The inherent lack of trust built into the

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23 Mensah, K (2012 June 15). "Advertising billboards towering over Accra, Ghana." The Africa Report; Bender, R. and Vranica, S (2010 June 15). " Global Ad Agencies Flocking to Africa." *Wall Street Journal*; Narku Dowuona, S.N (2011 Aug 12). "Predators of Ghana's telecom industry - Part I." MyJoyOnline.
24Modern Ghana (2011 Jan 15). "Mobile Telecom companies cautioned to stop painting Accra."

mechanism, according to them, also put them in moral quandary when attempting to access mobile money.

Social Media Use

Facebook has an incredible penetration in this country, with as many as 1.4 million users (Internet World Stats 2012). Its precursor, hi5, a little known social network outside of Asia, was also very ubiquitous, and depending on the age and techno-cultural practices of my participants, reflected a critical site for connection. Other online forums included BlackPlanet, message boards of various Ghanaian Web sites [including GhanaWeb.com and MyJoyOnline], Okyeame message board, and other small listservs for Ghanaian communities But by 2010, Facebook had overtaken all other social networking sites and forums as the key form of interaction for my research participants.

In this way, the asymmetrical position of tech users in Ghana produced a desire to connect and be seen as digitally literate. Homeland users who did not access to the robust forms of Internet connectivity nor a daily discourse normalizing tech use, pushed their counterparts in diaspora to adopt the technology to facilitate their own connection to global networks beyond Ghana. This discourse quickly overtook email communications and in some cases mobile phone calls. Nearly every person I spoke with in Accra had a Facebook account, accessing it directly from their laptop or mobile device. Cab drivers demoed for me low-bandwidth Facebook app on a feature Samsung phone. Despite this ubiquity, most "feature phone" users I spoke to admitted they posted little on Facebook, indeed socialized very little except to add friends, and monitor the wall postings of their associates. Due to the expense of getting online, other priorities, digital content generation via Facebook in Ghana seems to lag significantly behind the actual use of the software.

Ghana's IT sector, writ-large

Today 2014, Ghana's IT industry is very diverse with just over a hundred firms. Official ITU figures put the number of working professionals in IT at 4,800. The segmentation of these firms can be described in this way: large and midsized software firms (BusyLabs, SoftTribe, Rancard Solutions) providing large-scale solutions for corporate and government contracts; small entrepreneurs offering business applications (Web platforms, VoIP, email and other SaaS); small time Web site designers, programmers and app developers. The institutional services include large data centers (MainOne, Busy Internet, Vodafone) offering storage, backup and online data administration; and Internet Service Providers (the telcos such as MTN, Airtel, Tigo, etc.). Other businesses include online marketers, co-working spaces and Internet cafes. Post-secondary polytechnic education and technical schools also make up a large part of the Internet economy offering access to their students. These institutions also offer degrees in network engineering and computer languages. The majority of tech professionals I have interviewed work in the following industries: Banking, government, NGO-parastatals, software and hardware tech firms, international businesses and media organizations.

The particular histories of each telco firm presents a promising research opportunity for another forum, but here is a brief rundown: Ghana Telecomm (GT), an entity created by the deregulated state postal and communications bureau was the sole administrator of the Internet in Ghana for several years, until Westel became a second national provider in 1996 (Osiakwan 2007). The two companies would have sole authority to connect Ghanaian tech users to the global Internet backbone until 2006, though this was quickly tested when NCS began to provide

satellite-based access to the Web in the mid-1990s. In 2008, GT was sold to the British telco Vodacom, with the government of Ghana retaining a small stake in the new local firm, Vodafone. The controversial purchase effectively closed off the public infrastructure to free and unfettered access to the national Internet grid, as other firms would now have to pay to use the fiber optic lines formerly controlled by the state.

MTN, a South African-based telco, early-on acquired a leading market share in Ghana (53 percent in 2013 according to the NCA), at one time administering the national backbone with GT. Today, MTN holds much influence in the nations' communications policy. Expresso (formerly Kasapa) is a firm with a Ghanaian and African management team, though it's main offices are in Dubai. Its company motto is "We are an African telecommunications and information services company – an African brand for the people of Africa."[25] GLO, the brand owned by Globacom, is a Nigerian media conglomerate which gained access to Ghanaian Internet and mobile subscribers in 2008. It has been controversial firm for initiating a broad and sometimes invasive marketing campaign, but failing to offer access to its services until 2011, due regulatory compliance issues. Tigo, often thought to be a cut-rate alternative to the other ISPs, was the nation's first mobile operator, selling analog phones under the name Mobitel.

Ultimately, the impact of these differing structures is the production of a keen sense of asymmetry between diaspora and homeland. The digital actors profiled in the following sections are attempting to solve both a social and technological problem, and in the process producing advanced techniques in mobile and digital communication to bring greater symmetry to Africa's disrupted networks. It is against the backdrop of these asymmetrical conditions of connection, usage and Internet development that I examine Ghana's digital diaspora and activist developers. From this perspective, Africans and Ghanaians in particular are pursuing new techniques for connection via ICT in order to fashion a global cyberculture and intervene in techno-modernity.

CHAPTER III. DIGITAL DIASPORA AND
THE SOCIAL CONSTRUCTION OF GHANAIAN CYBERSPACE

Ghana's Digital Diaspora

The practice of digital diaspora and the repertoire of techniques used by tech users abroad have lead to new experiences in diaspora and homeland with respect to global sociality. In this chapter, I explore this phenomena, typically organized as the following questions: *What are the unique ways that Ghanaians are using information technology to link across diaspora?* To this, there is no singular tactic, rather, a constellation of practices and innovative techniques used to effect diaspora-homeland connections, producing Ghana's cyberspace. The principle tool in the last 15 years in the production of Ghanaian and African cyberculture as a whole has been the mobile phone, many times over more successful as a connection technique than the Internet, against the pronouncements of cyber-utopianists such as Stuart Brand (Turner 2006).

For this chapter, I pursue an examination of the micro-experiences of diaspora's digitization via analysis of interviews and Web discourse of the digital actors at field sites in the U.S., Holland, Ghana and online. As described by my research participants, the effect of these connection strategies have been multiple, impacting life in diaspora, trajectories of settlement abroad, relationships with tech users in the homeland, and a calibration of identities with regards to the homeland, as migrants contemplate return for a variety of reasons. This chapter frames discussions of diaspora around digital practices in the contemporary lives of Ghanaians living abroad in several locales (San Francisco, Chicago, the Netherlands and Ghana). I examine these via interviews and participation in virtual spaces for Ghanaians on the Internet, via Web sites such as GhanaWeb, MyJoyOnline, Twitter, Facebook, blogs and more.

Technological innovation in contemporary thought is thought to be the product of highly skilled tinkerers, engineers and software writers. Discussions of technology often focus on the mechanical, material, processes of expertise, and objects: In the realm of computer software and new media, this manifests itself in an obsession over gadgets and apps. Through the previous literature review, I have established that the object of creativeness in most forms of tech-making is located in the process of *innovation*, rather than simply in the material outcomes. Innovation is at the center of technology fashioning: Innovation reflects intellectual advancement, creative repositioning, systematic thinking, and the introduction of novelty. This research aims to describe several processes of material fashioning and technological innovation among Ghanaians living abroad in collaboration with their compatriots in the homeland. Once a rhetoric about distance and exile, the border experience of diaspora has been made metaphorical — a discourse about roots and circulation, rather than about specific communities. This is evidenced in the projects of Gilroy (1994), Edwards (2003), Alexander (2005) and other historic writers dating back to Delaney and Du Bois. Today's discourse in the Black diaspora reflects a certain ambivalence towards Africa, an inability to incorporate contemporary diasporic experiences and cultural production into the experience of diaspora: perhaps out of ignorance, unfamiliarity, or the focus of these deeply intellectual projects on the deleterious aspects of exile and the problems of identity. Yet, in this work, I attempt to examine diaspora expressly as a condition of being abroad, not simply Pan African practices, and discourse about Black homelands. This chapter examines the practice of *digital diaspora* as a material practice and sociotechnical innovation. In the research that follows, I describe a repertoire of techniques utilized by different Ghanaians

living abroad to establish connections home, towards a form of global sociality that is endemic to descriptions of the 21ˢᵗ century "network society."

The interplay between the tactics of homeland actors and diaspora actors, however, has contributed to a unique cyberculture, whose circulation is local, global, diasporic, trans-diasporic, transnational, national, and homeland-oriented. This research highlights specific valences in Ghanaian technological practice. Rather than describe this network in terms of a global polity, I frame Ghana's distinct cyberculture as the product of the technical infrastructure and digital habitus of its homeland network and it's digital diaspora. Ghana's cyberculture attempts to ameliorate the experience of diaspora and national identity, or as Ato Quayson would describe (2003), "calibrate" the techniques of connection, negotiating the infrastructures of failure — which remain the taken-for-granted sociotechnical conditions of societies on the periphery of the West. Despite the zeal with which theorists and pundits have embraced digitization as a process of establishing free, democratic and ubiquitous networks (Turner 2006), the conditions of connection between the core economies of the West and the peripheral systems of even improving societies such as Ghana remain *asymmetrical*. Technically, digital diaspora overcomes Appaduari's notion of disjunctive flows of globalization (Appaduari 1996), toward the establishment of truly global information network: Those strategies temporarily stabilize both technology and society in the current moment. Thus, these practices can be said to be tactical solutions to an enduring experience of being peripheral in the capitalist world-system.

Interpreting Techniques

Each week, Ohene, a former aid worker, receives dozens of calls from associates in Ghana seeking advice on business start-ups and development projects. Ahmed looks for the best deals in international phone cards so that he can speak to his children nightly. While doing business in Europe for a global medical firm, Nana Yewo makes a call to Accra, first dialing into a VoIP connection from his home in Berkeley. These represent just a few of the information technology practices of Ghanaians living in the Bay Area. Along with Twitter, WhatsApp, Skype, email, blogs, online radio and various Web sites, Ghanaians in diaspora are deploying ICT to connect with their ties abroad.

The impacts of these new media connections are multiple and at times multivalent: Each diasporic actor that I interviewed during the course of this dissertation and interacted with in-person and online, described needing to utilize specific techniques to interact with specific individuals and communities of Ghanaians. They described connection strategies to reach users in the homeland were not always similar to the digital media used to reach others in different parts of the diaspora: Skype for contacts in London, Instant Messenger for friends in Accra.

That the practice of diaspora is itself described as a composition of heterogeneous networks (Latour, 2005) in these similar ways is not new theory. In his description of diaspora as a "network of relations," Paul Gilroy has pushed the notion of diaspora as being heterogeneous, and developed through anti-essentialist cultural practices (Gilroy, 1993). Different tech diasporas examined in social research have capitalized on different media in different eras: For Trinidadians, fax machines, email and mobile phones constructed a transnational sense of being "Trini" (Miller & Slater 2000). The text-based public spheres of the pre-World Wide Web, email and message-board centric virtual communities have been important for dispersed communities of gamers, as well as members of on the ground diasporas, attempting political action, as well as new collectives (Bastian 1999; Pearce, Boellstorff, & Nardi, 2009; Tynes, 2007).

But while the understanding that diasporas are constructed as non-static, anti-essentialist notions of identity and community, it is clear from my work that information technologies (IT) have disrupted both the historic notions of diaspora boundary marking, identity construction and even the concept of a life-world, vis-a-vis new flows of homeland connection. Specifically, the conditions of isolation and disjunctive discourse have been to some extent been ameliorated via the creation of digital public spheres for the larger social imaginary of Ghana. The impact of these transformations are dramatic not simply for those living in diaspora, but for homeland practices of connection, as is described below. Ultimately the broad social construction of Ghanaian identity has been impacted by IT, and as Ghanaians come to know themselves through a range of both homeland-centric and diasporic-centered medias, the broader sense of being Ghanaian has also been impacted. What this research demonstrates is that while homeland development remains dependent upon enterprise in diaspora, diasporic actors are in many ways dependent upon homeland configured media in order to establish a sense of their own Ghanaian identity. Contemporary diaspora discourse assumes that foreign actors living in the industrial North are at a sociotechnical advantage with regards to global flows in political economy, remittances — donations and income sent to assist family members in the homeland — considered among the most productive outcomes of living abroad (Manuh 2005). While the technological sophistication of Ghanaians living abroad can be assumed to drive the latest developments in Ghana's cyberculture, these interviews and fieldwork reveal that Ghanaian cyberculture is just as dependent, if not more dependent upon the digital habitus and infrastructures in the homeland that links the broad network of a digital (re)public. In some ways, technology transfers in a circular rather than linear path.

That new media construct new notions of national belonging is certainly also has its precedence in Benedict Anderson's work on the imagined community: The birth of modern nationalist, Anderson claims was produced through collectivizing narratives maps, museums and newspapers, and thus media has always been central to the stabilization of political-economy (Anderson 1991). In transnationalism and immigration literature, diaspora has been conceived as a politics of identity for migrant groups. I frame the experiences outlined below as both within the experience of immigrant/labor diaspora, reflective of colonial flows, postcolonial opportunity, but also in the historical framework of the Black diaspora — a global racial formation produced via geopolitical transformations between the Europe, Africa and the Americas. Diaspora is not a singular experience or community, however. The experience of Ghanaian transnationals profiled below illustrates multivalent life-worlds intersecting with Ghana's various diasporas in the U.S.

Historically tied to the movement of Jews since antiquity, diaspora has gained particular acceptance in the latter half of the 20th century with the growth of transnational and postcolonial migrations since the 1980s. Political scientist William Safran provides an extensive set of conditions in its contemporary iteration, using diaspora to describe groups that have 1) gone through geographic dispersal; 2) yet maintain collective memory; 3) feel alienation in their host lands; 4) maintain a respect and longing for the homeland; 5) desire to maintain their distinctiveness; and 6) utilize the homeland as inspiration for their specific cultural institutions (Safran 1986). Migration scholar Robin Cohen adds additional criteria, including 1) idealization of the homeland state, 3) voluntary return migration, 4) enduring ethnic awareness in diaspora, 5) the co-production of nationality between disapora and the homeland, and 4) empathy for fellow ethnics (Cohen 1997). In political sociologist Rogers Brubaker's review of the concept, diaspora universally incorporates three essential qualities: 1) notion of dispersion; 2) a homeland

orientation; and 3) boundary or identity maintenance (Brubaker 2004). Sociologist Stephane Dufoix's consideration of the term atomizes the concept to any set of conjectures around identity that hold in tension issues of "referent and origin"(Dufoix 2008). These elements of diaspora theory remain hotly debated across disciplines, with arguments about to what degree dispersion need to have been "forced," as in the Trans-Atlantic Slave Trade or Armenian genocide (Tölölyan 1991) or driven by labor needs, such as is the case for the Indian diaspora (Bahri 2005). At issue is also whether or not diasporas are ambivalent or nostalgic for the homeland, while questions persist over whether identity maintenance or "collectivity" takes place at all (Clifford 1994).

Part of the issue in defining the concept of diaspora has been the attempt to theorize an ideal model for diaspora formation. Safran's extensive criteria attempts to do just that, privileging the Jewish experience as the foundational diaspora, an effort that Cohen has shown to be misguided (1999). He maps out, rather four distinct periods of scholarly discourse around the subject of diaspora, which help to contextualize contemporary obfuscation of the term:

1) Classical period, in which diaspora is framed as a particularly Jewish phenomena, which dispersion occurring during at least three distinct periods from antiquity to the 19th century European pogroms which gave birth to the Zionist state movement. During the 1960s and 1970s, the term diaspora came to embrace characterizations of coercive migrations of Africans, Armenians, the Irish and the Palestinians, largely, what Cohen terms "victim diasporas." This partially encompasses the approach in which African American scholars began to systematize the term, via the efforts of Shepperson and others (Harris 1982), which I will discuss later in this paper.

2) Cohen states that following this era, "a metaphoric designation" began to be applied to groups such as expatriates, expellees, political refugees, alien residents, immigrants and ethnic and racial minorities, as a way to define, what Safran calls "different peoples," during the 1980s. Diaspora begins to be used in this era as a rallying concept for the displaced, be they in direct experience of exile or several generations removed. The concept is also foist upon politicized minorities.

3) The postmodern critique soon developed during the 1990s, using social constructionist theory to problematize the idea of an originary homeland and the ethnic/religious criteria placed on these transnational communities. The contention here is that identities, in this moment of globalization are increasingly deterritorialized, constructed, deconstructed in flexible ways – ideas reflected in the highly influential work of Paul Gilroy (1994). Brubaker's own position is that diaspora is "a stance" or mode, rather than an identifiable unit or distinct people.

4) In scholarship since 2000, Cohen states that the concerns of social constructionism have been heeded and critiqued, that complex "networks of relations" should be acknowledged as not merely material and political, but also multivalent as well as cohesive. Still, the idea of "home and the stronger inflection of homeland remain powerful discourses and ones which, if anything, have been more strongly asserted..." (Cohen 1999: 3-4).

This is certainly true in the discourse surrounding the rise of Hindu nationalist Web sites, which provided key impetus for political strife in India during the early 2000s (Bahri 2005). As well, diaspora in the contemporary period is now seized up as a development tool, is the subject of international political strategies, relief and humanitarian aid (Brinkerhoff 2009).

The field of African Diaspora Studies has provided a particularly robust literature around the subject since Shepperson's early work in the 1960s. Diaspora in the Civil Rights era was used as a means of linking slave descendants to the continent of Africa, against the erasures of

white supremacy. In the historicizing of the concept, Shepperson illustrates how pioneering Pan African activists such as Edward Blyden, W.E.B. DuBois, and Lorenzo Dow Turner harnessed the concept of global African unity and the rhetoric of internationalism from the late 19th century through the 1950s as a foil to the Hegelian insistence that Africa was "no historical part of the World" (Hegel, *Philosophy of History*, quoted Shepperson 1982: 47). Blyden described "Ethiopia Stretching out Her Hands" and a "black stream of humanity" in order to acknowledge how Africa had been "a source and nourisher" of global historical forces. Along with W.E.B. DuBois' activism and the publications of *The World and Africa* (1947) and Turner's (1949) "Africanisms in the Gullah Dialect," Shepperson locates the impulses for a transnational discourse on Black experience which he terms diaspora. Linking these eras of Black transnationalism to the concept, he states the contemporary approach to diaspora and those since Blyden's time were interested in: "...the establishment and investigation of the areas to which the dispersed went and in which their descendants are living; the study of the interaction between these centers and their peripheries, at all possible levels; and the unceasing attempt to integrate these studies into the overall history of humanity" (Shepperson 1982: 52). Coming out of the struggles against racial oppression and colonial rule, these early scholarly descriptions of the "Black diaspora" attempted to acknowledge the originary history of what Robert Farris Thompson (1983) termed "the Black Atlantic" to Africa as well as the slave experience.

From this period of academic scholarship, diaspora research began to incorporate the experience of not only "New World" blacks, but transnational experiences in Africa, historicizing the Colonization, Emigrationist, Ethiopianist Garveyite movement, Black communism and Pan Africanism as tropes of diasporic movements. Skinner (1992) highlights a "dialectic" conflict between African nationals and African Americans in the post-colonial era, as experiences of co-articulated diasporic consciousness. As a new order in international relations began to emerge, new migrations of Africans into the West prompted by the IMF's Structural Adjustment Program (SAP), highlighted the role of African post-colonial states in the production of diasporic consciousness (Tölölyan 1991).Cultural and media studies theorist Stuart Hall's "hybrid" conception of diaspora introduced during this period as well, attempted to explode the simply ethno-nationalist dimensions of diaspora, to theorize the place of diaspora not as a homogenous historical body politic.

Diaspora as an identity, remains fluid and multivalent: Contemporary polities such as the African Union, the successor to the Organization of African Unity (OAU), seems to be harnessing diaspora not primarily as a trope of culture, identity and politics, but rather as a development tool, via tools such as the government run GhanaDiaspora.com.[26] With focus on investments, the African Union's language is ambivalent in it's delineation of diaspora, while extending a promise of partnership and seeking development: "The African Diaspora are peoples of African descent and heritage living outside the continent, irrespective of their citizenship and who remain committed to contribute to the development of the continent and the building of the African Union" (AU 2005). This rhetoric is Pan-Africanist in focus, yet, the policies of most countries revolve around enabling contemporary migrants to return home and support their homelands through remittances.

For Brent Hayes Edwards, it is "the practice of diaspora," indeed via the media, which he documents (letters, memoirs, newspapers), across ethnic, national and economic difference that

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26 A site maintained by the Diaspora Support Unit (DSU) in the Ministry of Foreign Affairs & Regional Integration in Ghana, Retrieved at http://www.ghanaiandiaspora.com/ March 2014. The motto of this Web site is "Think Home."

characterize diaspora; Diaspora is an abstraction, yet an anti-abstraction at the same time in that the politics are organized around a public and social movement. Edwards rejects essentialism outright in his concept of *décalage* or asyncretic life-worlds among members of the African diaspora. From the writings of Négritude writer and anticolonial politican, Leopold Senghor, Edwards uses the concept of *décalage* to describe a lag or gap "in time and in space," as a "structure of unevenness in the African diaspora." Heterogeneous media, space and time, produce a diasporic consciousness that is fundamentally asynchronous to the life-world of its compatriots (Edwards 2003: 13)

Décalage had been an enduring experience for my research participants prior to the advent of the Internet and the expansion of the mobile telephony, and this represents one of the key transformations of diaspora life due to the wide adoption of ICTs. In my interviews with Kofi Aidoo, a civil engineer in his late 50s, he describes the belabored, time rituals of international correspondence via postal letters and landline telephones during his youth and through the early decades of contemporary globalization.

> KA: It's like night and day. Even in the '80s, when I came back here for college, it was still very difficult to get direct communications. There was no direct telephone service. So you had to call the AT&T operator, and then some AT&T operator would try to make contact with some operator in Ghana and get the somebody you want to talk to, and call you back when the connection is made. Sometimes it would take about an hour or two. And in fact when I [went] on vacation in Ghana and I am trying to call here [to the U.S.], you go [to the Post Office], you make your request, 'I want to talk to my family in the U.S. Here is the number,' and you sit there for an hour while the operator is making connections. … So you go to the post and you sit there and wait (Aidoo 2009)

Social scientists working in the African diaspora in particular have attempted to address productive, regressive and contingent experiences of diaspora by framing it as "a process that generates subjects through negotiations arising from particular structural and historical conditions that change over time" (Clark and Thomas 2006: 13). Using engagements with diasporic subjects historically and via *in situ* social research, researchers have provided ample evidence of ways that diaspora marks "an identity of passions...but these may not be identical within particular communities" (ibid. 13). Social science research illustrates how diaspora communities comprise multiple cohorts, with diverse sociocultural, political and demographic valences, sometimes reproducing divides along ethnicity, gender, age and religion. These heterogeneous experiences cleave the concept of cohesiveness in what was traditionally conceived of as "high solidary" communities in the diaspora theorizing of Safran and others.

The delineation of diaspora in social science, humanities and cultural theory can be said to encompass the following constructions:

- A collectively identified group dispersed from a locality or social space, regardless of their reason for dispersion (political, ethnic, religious, cultural, subnational, ideological, labor, economic, disaster/emergency, and/or the historical descendants thereof)
- a social space that allows for the emergence of diasporic identity
- a discourse regarding transnational collectivist sentiments

- practices that acknowledge transnational connections of a diaspora, be they imagined, historic, ethnic or simply "relational," regardless of their synchronicity or success
- a sub or extra-national polity made distant from its homeland
- a process that generates transnational subjects via ever-changing structural and historical conditions
- a "mode" of thinking
- a social identity regarding any of the above
- tool for development

Rather than reproducing Safran's strict categorizations of diaspora and disasporic identity, it seems clear from the literature that diasporic communities can be described in multiple ways that both re-assert the notion of a unified extra-national polity, and acknowledge the diverse flows that mark disjuncture in these communities. In this regard, the construction of diaspora should be reflected in the methodology of the researcher or in social practice, which is only revealed, as Clarke states, via "a critical, historical and place-specific approach..." (Clarke and Thomas 2006: 14).

Ghana's Diaspora in Context

Ghanaians living abroad represent a substantial public with respect to the homeland. Historically, the regionally known as the Gold Coast was one of the busiest ports in sub Saharan Africa and was a central site of the Trans Atlantic Slave Trade, which produced fundamental diaporic formations at the dawn of modernity in the 16th century (Gilroy 1994; Scott 2005). In the colonial era, as the British Empire sought to establish a European bureaucracy for the facilitation of colonial trade, Ghanaian elites within the chieftaincy system routinely began to travel abroad to be educated in schools in England (Kimble 1963; Hadjor 1988; Mahama 2012).Up through the time of independence and traveling abroad became a sign of achievement, as West Africans began to populate education circles in the West. Kwame Nkrumah, Ghana's first president, and independence leader obtained both a bachelor's and doctorate degree in the United States. Ironically, this privileged circulation only exposed Nkrumah to the inequities of the colonial and world-capitalist system, as his employment was proscribed within the racial strictures of the racist Jim Crow apparatus in the U.S (Nkrumah 1956). He attended a historically Black college, Lincoln University where he sat in class with future leaders of Africa's independence movement such as Nnamdi Azikiwe, Nigeria's first president. As Ghana struggled to achieve self-sufficiency and industrialization in the post-Independence Era, technicization became a key goal, with a solid focus on Ghana's infrastructure, and the same was true for other African states (Nimako 1991).

In Ghana, this process of industrialization was characterized by Nkrumah's 7-year Plan, sometimes described as "the Big Push," a process of rapid mechanization and big science projects (Frimpong-Ansah, 1992). Among these was the construction of the Akosombo Dam, one the first and largest hydroelectric projects in Africa of its era. During 1960s, Nkrumah pushed forward with other projects such as the establishment of a canning enterprise, shoe factories, an aluminum processing plant in partnership with Kaiser Corporation, and the establishment of the Ghana Atomic Energy Commission (GAEC) (Miescher 2012; Osseo-Asare 2013).Aside from the Akosombo, these projects were fledgling, with GAEC failing to obtain any

atomic fuel for research until the 1990s, and the bauxite enterprise with Kaiser producing an exploitative reliance on Ghana's electricity infrastructure, and little profit for the homeland. Following the failures of Nkrumah's government to advance projects started in the colonial and postcolonial era, and his deposition via a U.S.-backed military coup, Ghana's economy began a long period of stagnation that did not begin to turn around until recent years (Nimako 1991). Post-Nkrumah mechanization was thwarted by famine, more coups, and the political instability of the Rawlings regimes during the 1980s (Nimako 1991; Goody 2007).Coupled with changes drastic changes in U.S. immigration policy, and the reorganization of the West's industrial economy around cheap foreign labor, out migration of Ghana's skilled professionals, the elite and educated workforce proceeded steadily, accelerating in the 1980s as the IMF's Structural Adjustment Program began to produce significant infrastructural changes in Sub Saharan Africa, with massive state-decentralization. By the 1990s, Ghanaian migration to the West, especially the United States peaked, with skilled and unskilled labors assuming a variety of key roles in America's economy. The medical industry, for instance, has been a key source of attraction of Ghanaian labor, with typically half of Ghanaian educated doctors and nurses, traveling abroad upon finishing schooling, primarily to meet the demands of the aging baby boom generation in the U.S., and the increasing stratification of the medical services industry (Manuh 2005; Yeboah 2008; Arthur 2008).

However, Ghanaians and other West African immigrants in the U.S. have been steadily active in prestige industries of finance, engineering and information technology, especially in the American education system. Ghana's digital diaspora has partly been constructed from the ingenuity of diaspora-based engineers and innovators, some of whom were instrumental in the creation of the earliest online communities for Ghanaians via Web sites like GhanaWeb, started in the 1990s, and listservs for the alumni of Achimota Academy in Accra, and the closed Web community, OkyeameNet, initially built as text-heavy bulletin-board discussion groups at Harvard and M.I.T (Bodomo 1993; Schaefer 2006).

But the participation of a critical mass in the production of Ghana's digital diaspora should not simply be examined from the content production of these lead-Internet users. The contemporary life-world in Ghana's cybercultural practices has been constructed via the widespread adoption of ICT among a range of users in diaspora, many of which were not involved in Silicon Valley innovation. The social web, or Web 2.0, as a contemporary manifestation of Internet sociality, has been a massive practice of adoption with programs, apps, and Web sites as blogger.com, MySpace, hi5, Facebook, perpetuating an explosion of "user-generated" content, thus further emboldening the rhetoric around democracy that cyber-utopianists championed in the early emergence of the World Wide Web. Yet, it is clear, while these forms digital connection across distance have been influential at some point in time for the majority of my contacts, the transformation of contemporary diasporic consciousness has been most significantly transformed by the mass adoption of mobile telephony in Ghana during the early 2000s, a period when Africa as a whole led mass adoption of mobile phone use (Rao 2011; GSMA 2013).

Though the exact figures are hard to calculate, the current estimates is that there are over 3 million Ghanaians living abroad, less than 10 percent of the total number of Ghanaians in the homeland comparatively (Owusu-Ankomah 2006). The U.S. census statistics from 2010 put the number of Ghanaians in residence at 100,000, though the number seems to be an undercount, likely due to undocumented migration, or unreported nationality — 1.6 million labeled their nationality as "African," that year (Census Bureau 2010). Organizers of the Ghanaian Councils

of Northern California estimates there are over 3,000 Ghanaians in Northern California, a small population that interacts with a larger subset of African immigrants that includes Nigerians, Ethiopians, Senegalese, Congolese, and others.

Digital Diaspora: A Form of Sociotechnical Innovation

The adoption of ICT for transnational identity and state formation represents a technological and social innovation by typically disempowered global agents. Often discussions of new media and technology presume that transformations are brought about by the introduction or diffusion of material objects from innovation centers in the Global North to emerging markets elsewhere: e.g. Introduction of computers, automobiles, refrigeration, water sanitation, steel axes. At times these flows are figured negatively: The developing world as a site of discarded computers, discarded automobiles, discarded nuclear waste (Verrips & Meyer 2001; Burrell 2012; Beuving 2013). Such a narrative focuses on a deficit model of development in Africa, ignoring the cycle of disruptions and dysfunction of the postcolonial era 1960s-1980s, that ultimately destabilized what was in the case of Ghana, a developing economy reasonably on par with other parts of the non-industrialized world, particularly India, China, and Korea during the 1960s (Werlin 1994). The current talk of a "Renaissance" also challenges this notion of Africa being simply a place of technological abjection, though the successes have been uneven across the continent (Mbembe 2001; Fergusson 2006; Gilley 2010).

Karim foregrounds the impact of digital diaspora, in his work on transnational television, radio, cell phone culture and computer-mediated communications: "Diasporic media have frequently been at the leading edge of technology adoption due to the particular challenges they have in reaching their audiences"(Karim 2003:12). And yet the origin of the concept as a cultural meme, as Cheddie explains, emerged out of a Black British artist movement in the early 1990s, in the multimedia work of Keith Piper's as documented in the 1993 online essay "Notes Of The Development And Use Of A Digital Diaspora" (Cheddie 1999). She states: "For Piper, the advent of digital technology which gives rise to 'an opportunity' for these globally dispersed and disparate communities 'to re-connect with each other in a pan-global communications network, sharing an exchanging experiences and information.' – the digital diaspora" (p. 163). Here the formulation of *digital diaspora* intersects squarely with Gilroy's notion of diaspora as a particular *space* of Black expression and communication, that is at once marginal and subaltern despite its proximity to the metropole: Owing to its expressive function and democratic agency, diaspora remains a practice against essentialism.

But rather than an observation of behavior, as Gilroy would have it, Keith Piper's formulation is still in the ethno-nationalist vein, posing diaspora as an entity in opposition to the nation-state or global capitalism: These artistic innovators are resisted the production of Black subjects via race-making *technologies* of the nation, such as census data, assimilation policies, as David Theo Goldberg discusses in his work *The Racial State* (2002). In this early formulation, digital diaspora ports the geo-political notion of diaspora into the online world, via what were at the time, limited networking technologies, but powerful "remix" tools (Lessig 2008). Digital diaspora does not simply point to an online forum for people with collective interests, such as an e-mail based Usenet group (e.g. *soc.culture.african.american*), rather, it is a collection of digital actors who view themselves as member of the diaspora in the offline world primarily.

Drawing from the work of social researchers engaged with virtual ethnic communities (Bernal 2006; Brinhkeroff 2009; and Alonso and Oiarzabal 2010), it is clear that via computer-

mediated communication, identities in diaspora are increasingly being informed by increased day-to-day connection with the homeland and other diasporic centers.

In *The Digital City* (2006), Michel Laguerre builds upon ethnographic work with several diasporic populations, describing the processes that impact the development of digital diasporas, which he terms here "virtual diasporas." For Laguerre, a virtual diaspora is an extension of a real life, or offline diaspora – a group shaped by the experience of dispersion. These online and offline diasporas play integral roles in structuring space in globalized cities. Like real-life diasporas, digital diasporas are shaped by the "flows" of technology, especially IT. The panethnopole and metropolis are sites for digital diasporas and temporality is an important element in understanding and describing these poles. Often consisting of marginalized populations, diasporas are rarely politically neutral, and their digitization often strengthens a diaspora's ability to play a role as a transnational actor. "Virtual diasporic space is that particular region of cyberspace that provides a virtual spatial infrastructure for diasporans to engage in on-line communications for the real-world benefit of themselves, the homeland, and the host land, a virtual corridor that links diasporic groups or individuals to each other, the homeland, the hostland, and other international entities." This a foundational understanding of the behavior, history and construction of digital diasporas. Laguerre surveys political science ethnographies on Silicon Valley-based Chinese activists during the Tiananmen Square demonstrations of 1989 and Haitian diasporic groups following Jean-Bertrand Aristide's controversial second presidency in 2001. The two case studies describe transnational, multi-directional influence and construction of digital diasporas. To de-globalize Laguerre's approach to diaspora a bit, one could imagine however regionally displaced communities that might also participate in digital diaspora flows, e.g. victims of Hurricane Katrina and Rita now living in other U.S. cities.

While Laguerre describes a virtual diaspora, Tynes begins with an identification of the virtual homeland in "Nation-building and the Diaspora on Leonenet" (2007). In this article, Tynes provides a description of an online community comprised of Sierra Leoneans in the homeland, those living abroad, Westerners, and English and native Krio speakers using a listserv (i.e. automated e-mail program). The discourse of this digital diaspora of Sierra Leoneans consists of Pan-Africanist leanings, state-building activities and global perspectives. To that extent, this could be conceived as a true African digital diaspora, despite the narrowness of the membership of node (under 400 registered). Tynes describes the functioning of this virtual diaspora space as a "virtual nation." Drawing on Anderson's work documenting the role of mass media in the construction of a national "imagined community," Tynes states that Leonenet members advance political projects (behavioral); maintain national symbols (cognitive); and maintain a communal sodality (affective), thus performing nation-building. Tynes describes a virtual nation as "any community that communicates in cyberspace whose collective discourse and/or actions are aimed towards building, binding, maintenance, rebuilding, or rebinding of a nation"(p. 502). This conception of an online community as engaged in nation-building draws on parallels from studies of other diasporic communities, specifically Goggin's description of the "Internet as national" in Australia (2004). Tynes work convincingly brings together relevant research on diaspora, national "imaginings" and hitherto uncollected African cyberculture research. "Virtual nation" though a strong concept, however, does not fully reconcile with the modalities of globalization, particularly transnationalism and the multiplicity of sites as global, local and temporal. Rather than simply a virtual nation, it seems Leonenet also function as a digital diaspora, in that its contributors were typically refugees of the political strife in the homeland, in many instances several years removed located. These actors not only delineated

themselves as Leoneans in exile from the homeland, but also demonstrated strong ties towards Sierra Leone as an imagined place, worked actively towards its restoration, and expressed a longing for return, key elements in both classical and contemporary descriptions of diaspora (Cohen 1999; Dufoix 2008).   In "Digital Diasporas and Conflict Prevention: The Case of Somalinet.com," security studies expert Brinkerhoff examines an African digital community at Somalinet.com, and advances further characteristics of these groups that she first takes up in her work on Afghan-American development Web sites annotated later in this paper (2006).

She says digital diasporas are those "organised exclusively or primarily on the Internet … Individual diaspora members typically have a range of options in terms of the variety of diaspora organisations that may facilitate their identity negotiation and integration. Thus, they may simultaneously belong to a physical world diaspora organisation and be a member of a digital diaspora.(27)" Identifying diasporic organizations, rather than broad reaching concepts such as the afrosphere or blogestan, is an important research move. It implies that research on virtual communities, even those of consisting of transnational diasporas, are in essence organizations, formally structured or informally. Brinkerhoff emphasizes Rheingold's ideas about the primacy of social capital in interpersonal exchanges, and the ability of Web sites in particular to harness these with a new set of rules, or "logic," of the Web including frequency of "posting," message content and network affiliation. In this paper, Brinkerhoff intends move past discussions of diasporas as threats to international security and illustrates via levels of statistical content analysis that the ethnic solidary established on Somalinet.com fosters liberalism, cosmopolitanism as well as parochialism. The majority of Somalinet participants hail from the failed state's physical diaspora. Discussions are hardly monolithic, however. On the North American forums, dating and sex talk predominate in ways which are "shouted" upon on other regional forums. The majority of Somalinet users, however, are engaging in the nation-building Tynes addresses, looking for material support of Somali families and migrants throughout their various locales. The wide diversity of exchanges, Brinkerhoff says, points to hybridity in these digital communities. "[Digital Diasporas] may be important targets for monitoring the degree of felt alienation, tolerance and potential mobilisation for violent action, and, more affirmatively, confirmation of hybrid identities and liberal values to combat discriminatory tendencies" (p. 46) .

In "Digital Diaspora and International Development" (2004), Brinkerhoff describes digital diaspora as simply "diasporas organized on the Internet." They are "emerging global networks with the potential to reinvigorate efforts to deal with development challenges" (p. 397). Brinkerhoff states "diaspora organisations give opportunity to negotiate cultural identity and enact it through communication and collective action." The three Afghan-American Web sites profiled in this study provide "solidarity," "community identity" and "empathy" that is strengthened by the process and outcomes of member-initiated development efforts (Kastoryano 1999). These processes come to define the digital diaspora. One diaspora organization in particular, Afghans 4 Tomorrow, found its "voice" via its Web site. The diaspora site served as a means to publicize and coordinate efforts, which ultimately strengthened the offline aspect of the organization. Brinkerhoff's research implies that the functionality of online diaspora sites are integral to their ability to fulfill psychological and material needs. Rigidly defined discussion boards on one site stymied community and solidarity. Projects that were initiated but not coordinated by another site's host organization typically were unsuccessful. The three diaspora nodes ultimately would serve distinct purposes for their digital diaspora. Brinkerhoff observed online rhetorical exchanges, and analyzed discourse on Web sites. Observations were paired with interviews with the founders of three Web sites. Brinkerhoff did not however engage digital

diasporans in their discourse. This ultimately impeded the researchers' ability to verify outcomes of solicited development efforts on these Web sites. Regardless, this is an important study in understanding the utility of diaspora sites, especially for the NGO sector. According to Brinkerhoff, USAID states more than 30 percent of international aid from the U.S. is distributed via economic remittances from diasporas to their countries of origins, making diasporas integral elements of homeland economies (2009).

For theorist Sangita Gopal, digital diasporas need not be represented by a physical disconnection between the homeland and the dispersed. She states IT workers on the Indian subcontinent "globalize the nation space by localizing it"(214), that is, engaging in global economy as employees of outsourcing companies from the West. Their way of life thus transforms local spaces into global nodes, and transforms their lives from that of citizens, to digital citizens. The digital diaspora for her, represents a "class" of workers, disengaged from postcolonial struggles by their connection to Western industries and wealth, the problems of national homeland, and engage in global capitalist consumption that ruptures them from place (214). This is a tempting reading of space in the Internet era, but if the 2011 Mumbai attacks are any indication, digital diasporas can never escape their locality entirely. Rather, this diaspora is more in the vein of Sklair's "transnational capitalist class" (2001). It is hardly a dispersal, though there is a certain level of disassociation from this privileged position.

A review of some of this growing body literature illustrates how digital diaspora is a form of virtual community (ethnic communities online), a diaspora media forum, that produces new online communities, a flow of workers connected by IT circuits and online discourse, as well as a development base for homeland agencies.

From these works, it is clear that digital diasporas consist of digitized diasporas, that is diaspora communities that migrate to the Web, Hindu religious societies for instance. Diasporic practices which are effected by an online community can also characterize it as a digital diaspora or being in the diasporic mode or practice. It is my contention, however, rather simply consisting of the digital networks, online sites, digitized ethnic communities or electronic discourse around the notion of a homeland, digital diaspora is a technological practice that creates new spaces for cultural flows, beyond diaspora and nation. This space is a "third space" (Bhaba 2004), not only between homeland and hostland, but as a intersection of techno- and ethnoscapes of the concept diaspora itself (Appadurai 1990). This new technology magnifies the sense of fragmented or "fractal" identities which Appadurai discusses via the digital encoding of diaspora encounters. It accentuates a polyvalent, rhizomatic and disjointed sense of community and nation, subject to multiple flows, simultaneously encoding completmentary, contradictory and contingent discourses. I will now explore these novel techniques as it relates to Ghana's digital diaspora.

Tactics of Connection

I am sitting in a very modest apartment building in Oakland: musty hallways, older rug, décor from the 1970s. Everything is beige or yellow in this bachelor's pad turned something of a receiving room. This is one the first meetings with Mantse, a key research participant, who is finishing a med-tech program at a local college. His girlfriend, a 24 year-old Liberian woman, lounges on a couch watching Nigerian films. Mantse is hosting some friends and I, and has prepared foods. He offers them some *kenke*, boiled rolls of sourdough, and soup, and offers me jerk chicken stew. We talk at length about his use of IT in the U.S. to connect back home.

Mantse's been in the U.S. since he was 13. In his 30s now, he's not only come to understand himself as an "African in America," but also among the first wave of digital

migrants, who adopted several connection techniques to connect back home over the years. A friend whom he recently connected with from Ghana and now lives in the U.S. also talks with us, discussing all the forms of media connections, used to connect back to Ghana and throughout diaspora.

In the discussion documented below, I attempt to illustrate the broad diversity of connection tools Ghanaians in the Bay Area and elsewhere used to produce their digital diaspora. The conversation is significant in that many of the techniques discussed are part of a repertoire of connection strategies, conditional based upon who is the intended contact in the homeland or diaspora, and what sorts of networking technologies the have access to. Between the three participants and myself, we share failed approaches, common tactics and new techniques of connection, that are not universally used within Ghana's digital diaspora. The contingent and at times ad hoc nature of these tools demonstrates their ephemerality and thus *tactical deployment* against what would considered the norms of global ICT connection, the Internet.

Oakland 2009

Mantse: When I used to have a lady [girlfriend] there [in Ghana] I used to call like everyday. And now I call like 3 times a week. I call a lot because of my interaction with the hiplife folks, in the hiplife industry. Plus I have a cousin who handles all my affairs for me. Like if I'm trying to get anything to here, like some CDs, get a phone somewhere else, he does it for me. So I'm in constant communication. I text him a lot. I email him a lot. He comes on the Net, we chat everyday. He updates me.

R: Would you say you do more phone calls or text?

F2: Yeah me, I do phone calls, and I do a lot of text messaging, and I have some other guy, like he said handling things, so if I want to give somebody some money, I just text this guy, 'Give him a hundred dollars for me.' When he get a text, he knows its from me…

M: Exactly. Well the guy that handles my stuff, I text him and he text me back. The other people they worried about their credit to text. They rather call you and say, 'Hey call.' Or they call you and hang up or tell you to call them back (*F2: Flashing*) That's

what they call 'flash.' … Have you heard about that term? It's very annoying, they do it at midnight (laughing) And half of the time, the name don't come up, it says unknown. It's the most annoying thing, I don't know who it is, and they do it like 5 times. Sometimes they're in NY and they forget, they think we're in NY, so 4 o'clock or 6 o'clock in the morning, they'd be calling you, because they calculated NY time. And they flash you, thinking you see the number and they hang up.

It's like that commercial somebody. This guy calls 411, [no] its pizza delivery … [*Explains the phone commercial where a son is calling to tell his parents that his wife had a baby, but is too cheap to pay for the call. So he does a collect-call and gives his name as "It's a Boy." All laughing at the commercial*]
….

F2: *You* have to call [Ghana.]… But they have another way to call your phone. The operator, he's sitting on the computer. He's in America, I'm in Ghana. You're in America. The operator will call you, and I'll type: Hi John, How are you doing? The operator will read for you, 'Hi John, how are you doing?' Then you respond to me, then I type back, then the operator will read to you,

then you speak back. That's the new thing they're coming up with.

M: That's what … you know the deaf people? That's their form of communication. So that's what he's explaining. And that's how it used to be, that's what the technology, what they call it [TTY]. You speak to the operator or you have some kind of interpreter. They interpret what you're trying to say, and then they inform whoever can speak.

R: And you say they're using that more often now?

M: Well, then sometimes, I get a call and it'll be, 'You have a call from…' Sometimes.

F1: Is that cheaper?

F2: No, I think it's free.

R: So people will call from cell phones or …

F2: No. You are in America. I'm in Ghana, the operator is in America. So when I dial the company, I go to their web site, the operator comes up on the screen. Me and the operator is communicating by fingers… by typing. Then the operator will read what I type to you. Then you gonna respond and she gonna type to you. Me and the operator are typing, you and the operator are talking. …

M: I haven't heard about that one.

F2: So when the operator dials, he says 'Is this John?,' You say 'It's Mr. John.' They be like, okay, such and such wants to talk with you, Okay. Then you in Ghana would type, 'How you doing John?' and the operator would text, 'How are you doing John?'

M: And that's free? F2: Yes.

M: There was a similar situation with text messages/ I don't know if still exists, because text messages was costing a lot. When you text through the network they would charge you. But you could go to a Web site, SMS.com, and you could text anything you want and you text it to a phone number. And it's free. There are different ones, a lot of people were talking about it.

That's a lot of work to me, I would not try that.

F2: Well, they been doing it. I don't know what company has been doing it, but I think that there's a Web site …

M: Sometimes when they start up, they do stuff like that, free. But later on, when they get a lot of people interested in it, they start to charge.

F2: Like Skype…

M: Like Skype, yeah, it's the same thing. A lot of people use Skype too, through the Internet. Skype is very popular.

F2: Let me tell you another way, with BlackJack.

F1: You mean like Blackberry …

F2: … You know like most people in America here, we leave our Internet on, we just go. I never turn off my Internet. There's a small device called BlackJack, no …. Magic Jack. And they'll give you phone number and everything. It's like a Voice Over IP, and they give you a phone number. But check this out: All the MagicJack needs is Internet. So it doesn't matter where you take it to. I was even trying to bring mine

[here to Oakland], in case I want to make long distance calls. Save on my phone bill, save the hotel bills or whatever.
Okay, if I send it to him in Ghana, all he needs to do is plug it into the computer and he's going to have an American number. And plug it and he can call anywhere in America for free.

M: Let me tell you my problem with that, why I didn't rush to that. I didn't rush to do it… you have to have Internet.

F2: That's what I'm saying. You give it to the people at the Internet café. I have about four friends I grew up with…

M: How many people have Internet café friends? That's why I didn't do it, my manager … He complained about the same thing. But here's what he did. He has Internet that he bought similar to that BlackJack-thing, that they use over there. But then he transformed his Internet at his home into an Internet café, so that it would make profit. Because Internet is like $80 [a month], ... That's ridiculous [*says exacerbated*].

F2: Like my friend, he already had the Internet, so he just plug the MagicJack in.

R: So you can only do it between two people?

F2: No, no, you can do it just like a house phone. The whole Internet café would turn into a house phone with the telephone number. Say okay, it's $20 for 30 minutes, they put the $20 down, [*makes a sound like computer processing, plub-plub-plub-plub*] just like you would dial in America, but the thing is in Ghana. They pick it up....

R: You don't *have* to call another BlackJack, you can call another number, right?

F2: You can call house phone, you can call cell phone, anything.

M: You know how VOIP works right? You get a local number, so you can take this local number to London, and it will run through the U.S. number, just like the U.S. same thing.

R: So have you given anybody that in Ghana? M: Yeah. F2: Yeah.
R: Who? Your family?

F2: No just my friends.

R: You said Internet café friends? Do they work at the Internet café?

F2: No they own it.

M: His friends, the people he wanna communicate with have access to the Internet because they work in the café, most of us don't.

F2: And here it's only a one-time payment, you buy the thing for $50, if you pay $20 for the whole year, as long as you have the Internet, you have the phone with the voice-mail and the three way call and everything, just like your house phone. So I wired it up to my house, my house phone is wired up to it. It's got three-way call and everything. Magic[Jack].

R: You said you used Skype before, which do you prefer?

F2: I use the MagicPhone, even the Skype, you have to pay, in America you have to pay. BlackJack [MagicPhone] for 20 dollars, you done. It's free to call anybody, anywhere you want, except on BlackJack, you cannot call outside of America, you have to call the 50 states.

Analyzing Tactical Media Use

Ghanaians in diaspora deploy a range of media techniques to connect with other Ghanaians living abroad as well as ties back home. These practices are not singular. Rather they represent a continuum of connection strategies that are influenced by factors such as income, exposure to technology, social networks, access to Internet and broadband, age and lifestyle, and most importantly the access to technology of their connections in the homeland. While these techniques are diverse, what was most surprising from my interviewees was the multiple and consistent ways users continually attempted to calibrate their connection strategy through diverse media ecologies, never settling on one device, system or technique for too long or uniformly for all their network associations. Like digital content, tool use is the ephemeral as well as tactical; appropriate for specific communities, and at times, only short specific periods (

Multivalent media: In the above exchange, Mantse and his associates illustrate how their cybercultural interactions are hardly unidirectional nor uniform, even among digital actors in diaspora. The discussion offers moments of surprise, each compatriot sharing tactics that seem at time typical, but also novel and sometimes extreme. The choice of tools, as they describe, reflects personal preferences, and also what social role their homeland connections play in their transnational life. Mantse states elsewhere in the interview that he prefers to connect with musicians via hi5.com, an early contemporary to Facebook. He used this social network for acquaintances and friends who "did not have an email address." Whereas with others, instant messenger programs such as AIM and Yahoo! IM, were more useful. In attempting to connect abroad, Mantse describe using an Internet-centric approach, attempting to rely on landline Internet tools such as VoIP, Skype and MagicJack, a usb-enabled VoIP device to produce telephone connections. Conversely, those in Ghana who have attempted to connect with Mantse and his associates in the homeland tried an impressive range of improvised tactics: instant messenger (AIM or Yahoo!), email, SMS[27]-messaging Web sites, TTY-audio-to-SMS services, etc. In our most recent interviews, Mantse says WhatsApp is his number one connection tool, a smartphone program that has limited ability to interact with SMS messages. Out of the dozens of individuals interviewed for this research, I could list similar heterogeneous and hybrid forms of tech adoption and strategizing for social media.

For Nana Yewo a 50 year-old medical professional living in Berkeley, VoIP is a key technology for his connections back home. Yewo lives in Berkeley's affluent hills area, and he travels to Ghana between business trips to Europe several times a year. There he meets with his family and advises on philanthropy work he does in education. For him VoIP (Voice over Internet Protocol), a form of audio relay that relies on broadband Internet service is his main mode of contact. He can access while he is traveling abroad in Europe, and has installed a VoIP connection at his mother's home north of Accra. Yet, he describes the connection to her as intermittent, troubled by bandwidth issues in Ghana He also follows Ghanaian soccer via GhanaSoccerNet.com and looks at news regarding Ghana daily on GhanaWeb.

Ahmed is a 48 year old truck driver living in Alameda, Calif. His primary tech usage is carried out through mobile telephony in conjunction with commercial calling cards. He is constantly on the search for cheaper cards and has to often change cards due to their lack of reliability. He talks on telephone to his two children, who live in Accra. He calls them nearly every night, and spends most of his weekends speaking to Ghanaians in the homeland by phone.

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27 SMS refers to or short message service also called "texting," a native program for mobile devices.

Like all other respondents, he typically receives calls or "flashes" and is expected to call those living in Ghana back home. He says his busy work life does not permit him to surf the Internet much, so social media and Web sites are not part of his repertoire, though he uses email to connect to other Ghanaians in Northern California.

Asymmetries Across the Network Most significantly, in interviews with tech users in diaspora, it is the digital habitus of the *other* participants in the transnational network, i.e. the connection strategy of the user in the homeland, that dictates the tools of connection. Often this tool is a mobile phone — should the infrastructure for mobile phone use be available. This is not always the case, especially in the rural regions of the country, where nearly 80 percent of Ghanaians reside. Kofi Aidoo, a Berkeley-based civil engineer, speaks with someone in his extended family at least once a week via mobile devices he has purchased for them. In our interviews, he stated that reception in villages outside of Kumasi where they live has only improved in the last few years, making regular mobile phone use a possibility. Tech users in metropolitan areas such as Kumasi or Accra, can rely on Internet-based telephony as well as mobile devices, and less frequently landline phones. To connect with others in diaspora however, Aidoo participates in an email-based Web community that he and a few others started 15 years ago. The small community of 50 participants share jokes, birthday greetings, news from Ghana, and coordinate aid projects. While members live primarily in diaspora, in New Jersey, Toronto, London, etc., just a handful live in Ghana, mostly return migrants, according to him.

But the sophistication of these connections aren't always from highly connected diasporan to low-tech homeland users. Amma, a graduate student in her 30s, living in Holland, describes her social media use in this way: "Facebook is mainly for like pictures and 'liking' things, whereas Twitter is more for journal articles and things like that. And then like another news feed" (Amma 2013). Her tech use can be categorized in still more succinct ways: Comparing her Facebook and Twitter use, it is clear that she shares a great deal personal information regarding her and her family ties, be they in Ghana or elsewhere. Twitter posts however, evoke the diaspora experience. She constantly is asking about the state of conditions in developments experienced first-hand in the homeland: Questions about award winners at tech conferences in Accra, responses to President John Mahama's State of Union address, experiences at polling sites during the 2012 elections, or updates on World Cup matches in 2010. Her Twitter community is linked to social media enthusiasts primarily based in the homeland, a cadre of elite tech users who participate in events blogging conferences and students at Ashesi University College, a small liberal arts and tech college outside Accra. These are Ghana's digital elites, and though operating from a more limited and challenged Internet infrastructure, their practices of represent robust forms of discursive online production, rivaling and surpassing digital actors in diaspora, such as Kofi, Nana, and even the social media savvy Mantse, who are not active bloggers.

The habitus of homeland users, and thus connections to a Ghana's global cyberculture, is also highly attenuated to both socioeconomic conditions and infrastructural conditions. Chemphe is a computer programmer who relocated back to Ghana from the Washington, D.C. metro area and started an IT business from his new home in Medina, a section of town just outside of Accra. After a few months out of what he believed to be a busy urban neighborhood, he ultimately moved his office closer to the core of the capital because of lack of access to a landline telephone, spotty Internet reception, and lack of other infrastructural amenities such as running water and electricity. Following a particular rainy season, the roads outside his apartment were

pocketed with potholes and not passable. Despite having an address in the greater capital region of Ghana, his means of connecting to ICT was limited by the specificity of locale.

A scenario like that of John Elmina at tech worker in his 50s living in South San Francisco provides an example of what could be termed *reverse-adoption*. Elmina stated he did not start using Facebook until his friends from secondary school (high school) in Cape Coast asked him to share photos there. They repeatedly asked him to create an account which would be more convenient for them to reach him.

Mantse described a similar scenario: He didn't learn about WhatsApp, which he's been using almost exclusively to link back home since 2012, until after a visit to Accra for the Christmas holiday season, where associates in Accra very with the mobile app. Indeed, to call from a U.S. mobile device to a phone number (mobile or landline) in Ghana is typically challenged by the prohibitive pricing policies and the technical differences between cellular networks: The largest American mobile carriers (Sprint, Verizon, and U.S. Cellular) typically use CDMA radio signal networks for their phones, while most of the world including countries in Europe and Ghana operate off of GSM radio networks for the cellular technology. Ghanaian immigrants thus must rely on the two major American networks that make it easy to make international calls, both of which pose sociotechnical disadvantages: AT&T charges exorbitant rates for international calls. T-Mobile has cheaper fees, but has a significantly smaller cellular network in the U.S. This is part of the reason many of my U.S. contacts used calling cards in conjunction with other technologies such as VoIP. Few of my participants in the U.S. had more than one mobile phone, which contrasts with a robust and sometimes ostentatious culture of multiple phones among users in Ghana. What is generally a cheap option for tech users in Ghana, is actually a barrier to access in diaspora, as phones in the United States at least are cost prohibitive for both the handset and subscription, though the overall cost is a fraction of U.S. GNI at 1.5 percent (ITU 2013b).

Generational differences: From my research it also seems clear that diasporans over the age of 40 are less active in social networking sites such as Twitter, preferring networking strategies that focus on oral communications, techniques that are discrete, including mobile phones and Skype. They are also preferred to use email, though some stated this has tapered off with the reliance on mobiles. Some even described text messaging as cumbersome, "That's for the younger generation," said Kofi Aidoo, though this may reflect certain valences of practice from network-privileged diasporans. He, a diasporan in Berkeley, Calif., described many of his connections in the homeland as being relatives and older siblings. Tech users I interviewed in diaspora under the age of 40, conversely described active use of social media including sites like Twitter, LinkedIn, etc. Internet-based apps and mobile phone apps are at the center of their connection strategies. The divide reflects contemporary usage divide among older adults and youth (Pew 2014).[28]

Apps As Nodes   WhatsApp and other Web enabled SMS programs (Viber, Skype SMS, etc.) are becoming a powerful workaround for tech users in diaspora. In Ghana, WhatsApp works as an app for smartphones, and is also available to some degree as a tool on "feature phones,"[29] though other apps such as 2go and Saya[30] accomplish this better and are more widely

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28 In the U.S., just 27 percent of adults over the age of 65 are active social media users (Pew 2013).
29 Feature phones is the general term used to describe a 12-button keypad phone, with limited computing features. Sometimes, also referred to as "candy bars" for their shape, popular makes include Nokia, Ericsson and Samsung, and they are among the lowest price phones on the market.

popular on the continent. WhatsApp and tools like it maximize wireless Internet connections by using the app to connect messages online, skirting the mobile phone's native text messaging services and the accompanying pay-per-text service charges. Thus, they are an attractive tool for diaspora-homeland connections. However, many of contacts stated that multimedia transmissions via this app seldom are sent from homeland to the diaspora, again due to bandwidth issues and cost. They described sharing of video, photos and music typically with users in WhatsApps groups who were in other parts of the diaspora.

Elite users and diasporans dominate Internet content production From my examination of digital media production via social media sites (Twitter, Facebook, Instagram, blogs), and interaction with users, social media is dominated by diaspora users, especially in the U.S., where data-pricing for the Internet and mobile phone are cheaper relative to the pay-per-use model in Ghana. Significant online communities exists in Ghana (BloggingGH is significant here) the vast majority of the Ghanaian online Internet users for my diaspora-based research participants were to other members of the diaspora, both locally, and in other parts of the diaspora (New York, London, Toronto, Amsterdam, etc.), who have ready access to broadband Internet services allowing to maximize use of video conferencing features of Skype, as well as YouTube, Google+Hangouts, etc.

Diasporans are conscious of their network-privilege, versus connectivity in the homeland, if only to recognize the tenuousness of IT connections in Ghana:

The home [landline Internet] is just awful. … It's down, it's up, and then they cut it off. When I went home in the end of 2012, it was terrible. When I went home in 2011, it was great, so I don't know [why.]... And you would call [customer service] and nobody would be answering the phone or they never come back to you (Amma 2013)

That Ghana's Internet culture is primarily the product of a global media culture, dominated in some venues by content from those in diaspora is not revelatory given the long running awareness of a global digital divide, driven primarily by socioeconomic access and its attendant digital praxis (Alonso and Oiarzabal 2010; Fortunati, Pertierra and Vincent 2012). Such has been the majority of research examining differences in online content production and tech use in the U.S. along race and class divides .

When the question was posed to diaspora actors about unique Web sites for Ghanaians, typically there was a roll call of common sites such as GhanaWeb, MyJoyOnline, PeaceFM, GhanaSoccerNet, ModernGhana, OMGghana, and GhanaMusic. Slightly less mentioned were discussions of Ghana-specific blogs, such as Ghana-based developer Ato Ulzen Appiah (mightyafrican.blogspot.com) and members of BloggingGH online community, many of which are based in the homeland. Appiah's site is significant in that he first started blogging while a student in the U.S. in the early 2000s, and has since expanded his blogging to other sites, which he operates from Accra as a returnee.

Among my Twitter contacts, consistently the most active were musicians in diaspora (@Twi_Teacher; @GhanaMixTapes; @manifestive), as well as the Web sites for GhanaMusic.com, a New York-based company. Twitter users from Europe were also very active

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30 Saya is a startup company, based at the Meltwater Entrepreneurial School of Technology, which has been a vital incubator for developers in Accra. 2go is a popular cross-platform SMS service, based in South Africa.

with developments back home and had many connections to bloggers in Accra. Social media in general produced robust connections for especially young adult Ghanaians in diaspora. Sionne, a 25 year-old college student, whom I interviewed in Chicago, stated her main means of connecting back home was principally through Facebook. She is active with a diaspora-based church group, which she frequently posts about on Facebook. Her connections to other Ghanaian social organizations via Facebook consist of entertainment companies based in New York and Atlanta. While she stated she frequently listened to the Ghana-based radio station PeaceFM online via a mobile app, more often than not, she listened to a local, Chicago-based Internet station LegendTalk radio, as a chief source of information about the diaspora and less so Ghana (Sionne 2010)

Transforming Diaspora

The connection strategies discussed above begin to describe the contours of Ghana's cyberculture, especially via the media between users in the diaspora and ties in the homeland. Homeland has been brought to diaspora via ICT. The formative experience of diaspora, isolation and disconnection, and often generally associated with immigration, are blunted by the sociality of digital connections, including mobile telephony, instant chat, video conferencing and a range of parallel media cultures including, satellite TV, contemporary African cinema, hiplife and Afropop music, international soccer, the fashion industry, and circuits of religion — including the growing Christian evangelical "megachurch" movement (Gifford 2004).

However, for many of my research participants, their participation in Ghanaian cyberspace has had specific impact on experiences in diaspora, particularly with regards to the core experiences of living abroad, in the following areas: 1) Enhancing real-time interaction and more *synchronous* flows with the homeland. 2) Strengthening a sense of homeland-bound nationalism. 3) Ameliorating a sense of alienation produced by dispersion, through the creation of broader onland and online networks.

Synchronicity Against Décalage

One of the key transformations in the diaspora experience for Ghanaians living abroad has been the increasing synchronization between *diaspora-time* with *homeland-time*. Several theorists have examined these as one of the key affordances of digital networking tools. IT has been said to "collapse" time from the standpoint of the user (Manovich 2002); time is made ephemeral with the archiving or lack thereof of digital content (Chun, 2008); IT is also said to enable a colonizing influence of diaspora time, as working regimes, holidays and cultural festivals come to impact homeland circuits of space and time (e.g. Chinese New Year, Dios de los Muertos, Ramadan, West African Homowo or yam festivals) (Laguerre 2003).

Brent Hayes Edwards notion of *décalage* is an important departure for understanding this point of disconnection that is foundational to pre-digital diaspora. It is not that diaspora cannot be accomplished over distance, is that the discourse that is thought to unite a media public such as Benedict Anderson describes, is fundamentally challenged. This is especially true in the absence of stable media forms like newspapers or national television show. These do exist in Ghanaian communities, especially on the East Coast of the U.S., in Chicago, in Toronto, and in some communities in the U.K. There are conspicuously absent among Ghanaians in northern California. In the absence of a single nationalizing voice for diasporans however, social media, and digital cultures have stepped up to collectivize formerly discrete techniques such as letter writing, landline phone calls, and audio-cassette exchanges. Even the circulation of music is

described as unifying media for diasporic publics, though in the '80s and 1990s, these were dependent upon a global, non-Ghanaian audience as well.

With the advent of user-generated and self-published electronic communications, a digital diaspora has been constructed, linking actors living abroad to the contemporary life-worlds of Ghanaians in Accra, throughout the country and also with diaspora communities across the globe. While the media transitions in part have reflected Moore's Law[31] and the emergent forms of digital culture evolving from Internet to mobile connections, the chief development to emerge in the constructing of digital diaspora has been the collapse of colonial- or nation-time, and the emergence of a digital chronoscape (Hassan, 2003),[32] a phenomena that while hardly symmetrical across class and territory, has brought formerly isolated, exile communities of the immigrants living abroad into greater synchronicity with the homeland.

From the perspective of my research participants, the increasing sophistication of digital tools has lessened a sense of isolation from the cultural rhythms and life-world of the Ghanaian homeland, and increased daily interactions with Ghanaian social ties globally dispersed. The trajectory begins for many older Ghanaians, with the experience of diaspora compared with prolonged episodes of parental and familial separation as a youth. In junior and secondary schools in Ghana, in particular, several of contacts report that their interaction with parents, elders and other kin was limited during the boarding experience of school year. Letter writing became an important source of connection, as students would typically only see their families during school breaks and holidays for months at a time.

> RR: It seems you would only reserve that [calls] for certain conversations or certain special occasions.
> KA: Exactly, most of the time you communicate by mail, you write letter and provide information and see what is happening. If you really, really needed to talk to somebody, you'd send them a telegram. Say I need to talk to you about this, why don't you call me on this a date and make an arrangement. And then the person tries to then try to reach from the post office and try to call you.
> RR: How often did you do that?
> KA: Not often, maybe once or twice a year, I tried to talk to somebody.
> RR: And it was because you couldn't reach them by phone or…
> KA: Couldn't reach by phone, it was too difficult. And you could write and they would write back and then you would get information. One aspect was also that because of the lack of development, telephony, while you're growing up it was not part of the culture to want to talk to somebody on the phone. Because not many people had the phones, we lived in the country…. So living here and not being able to talk to them was not a big deal, because that was something I grew up not expecting to be able to talk to someone I know (Aidoo 2008)

Once in diaspora as an adult, the experience of isolation was typical function of the lack of synchronous connection technologies such as landline telephone. In the 1980s and early 90s

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31 In 1965, Gordon Moore of Fairchild Semiconductor future-cast that advancements in computation and software would double according to computer-chip complexity, originally theorized as a yearly cycle. This was later adjusted to 18 months. Innovation is in-fact dependent upon a range of adoption behaviors, external to devices (Moore, 1965).
32 This has come to be known as UNIX time in computer discourse. This software which underlies the majority of operating systems for all modern computers, marks actions and processes time according to a linear time-clock that starts in the year fashion.

when many of interviewees describe migrating to the U.S., landline telephone connections were still extremely sparse in Ghana, especially more rural areas and hometown villages (Ziegler & Asante, 1992).

So we're saying it started with the Telegram, which is the true fact. Back in the 70s, our parents used telegram, then they went to letter writing, and then to home telephone, and now its cell phones and even text messages. And its gone beyond, to email and even right now social networking, Myspace, Hi5 and Facebook. (Mantse 2008)

To mediate this distance, Ghanaians in diaspora continued an asynchronous postal discourse, which later included audio cassette recordings. One participant stated that rather than long-single session narratives, the audio cassette recording would take place over weeks if not months, collecting a discourse on current events, sometimes with vocal messages from other family members, a mixtape of correspondence. As email became increasingly available to users in diaspora and in the homeland, this became a central tool for diaspora-homeland connections. Thus, the legacy of Internet-systems such as email listservs such as the Okyeame network,[33] an Achimota School alumni listservs, and the even GhanaWeb, were products of early email and messageboard-based networks, that preceeded the introduction of graphically rich software for Web browsing in the early 1990s. Such tools for Africans in the diaspora have been documented in research on transnationals from NaijaNet (Bastian, 1999), Sierra Leone (Tynes, 2007), and Ghana (Schaefer 2006), communities that were typically started by transnationals, attending engineering school in the U.S. and Europe.

As Victorial Bernal states in her work on Eriterian online communities examined in her work, these computer mediated connection techniques pre-date the WorldWideWeb: "Thus, Eritreans began their efforts in digital communication at a time when many Americans, such as myself, had no access to or interest in computerized communications. *Dehai* continued to evolve as new information technologies developed and became a Web site" (Bernal 2010: 124).

Information habitus and the production of Ghanaian identity
Nearly every participant in this research, especially those under 40, remarked that their chief reason for going online and using IT to connect with associates in Ghana, was to consume news, thus produce a consciousness of contemporary events in the homeland. When asked about their earliest Web experiences, going online for information about Ghana was often my interviewees chief reason for using computers.

Mantse explains that he did not start using the Internet until he relocated to the U.S. in his teens. One of first sites he remembers visiting regularly was an online directory of Adinkra symbols that a friend showed him at his junior college library:

M: I wasn't down with the music at the time, but.. There were a lot of sites that were coming up around that time about Ashantis or the Adinkra, I see the Adinkra symbols. So once in a while I type in when I'm bored.
R: Now were these Ghanaian sites?
M: Well you type in Ghana or whatever you want, Adrinkra symbols. And things will pop up. Like the whole Ga empire, I read about the whole thing, way back in 1997.
R: Now is that something you didn't know growing up, I'm surprised…

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33 Now a message board service as well, at http://www.okyeame.net, Retrieved March 2014.

M: They teach you, but [this was] really in depth about it. This was more than 20 pages, getting to know my own teaching, compared to somebody interpreting it to me. So got to learn more about it (Mantse 2008)

In addition to information, *news* as the object of desire for Ghanaians living abroad is significant in many ways it illustrates how vital the role media plays the process of identity construction (Anderson 1991; Kellner 1995; Hall 2001).As a comparison, see the language used by participants on the Dehai.com's message board forums as recorded by ethnographer Victoria Bernal: " 'Dehai adi intai alo' 'What news is there of our home country?' was the usual introduction to any conversation between Eritreans… (Bernal 2010: 125).

While many Ghanaian users of Twitter, Facebook and other forms of social media including mobile devices expressed an interest in experiences in the diaspora, (GhanaWeb both aggregates diaspora-news and provides a separate page for diaspora items), I observed during interviews and online how current events in the homeland were the primary interest of those in diaspora. For many, this consumption of news from Ghana seemed to be serve as a gauge of their sense of being Ghanaian. Despite the diaspora-base of many of Ghana's new media outlets, few were-diaspora focused, and except being Chicago's LegendTVonline.com, an online radio and media player.

Which is not to say that the digital production Ghanaians in diaspora using social media was quite synchronous with developments in the homeland. During a water shortage and fire-crisis in urban Accra in Jan 2014, I was struck by the lack of RTs by Ghanaians living abroad as posts such as the following proliferated in the homeland Twitter-scape: Accra-based @GhanaWire, reposts a news headline from bloomberg.com: "Ghana order plant remain open to prevent wider water shortage." Another writes, "On Twitter I read about there being no water, no electricity in Gh and people here were telling me warmly that Ghana's 2nd only to SA! [South Africa]."(sic)

Another example of this disjunctive Web discourse between Ghanaians abroad and homeland tech users, occurred during a research trip in Ghana in October 2012. I observed on TV the first of several debates between Ghana's top four presidential candidates, sitting with a group of bloggers who were active in a civic organization, GhanaDecides. As we sat together in the town of Tema, surfing the Internet and commenting on the campaign promises of the candidates speaking in Tamale to the north, I recorded Twitter threads of users in Ghana, and compared with digital actors living in Diaspora: While my contacts in Ghana were actively posting critiques of the televised statements to their followers, diaspora actors with thousands of followers such as @Twi_Teacher in London were chatting about a key match for the Arsenal Football Club, with no mention of the election event. Hurricane Sandy discussions dominated the Twitter-logs of Ghanaians in the U.S. — even for active posters such as entertainment blogger @BrotherAhmedGH,[34] who resides in Chicago.

Strengthening and Loosening Ties: Mediating Alienation and Bulkanizing Diaspora
Diasporic life is built up as an experience of exile. The impact of alienation is negotiated with the construction of meaning in diaspora, that for many emphasize long-term acculturation to

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34 This is a pseudonym of the participant's Twitter handle at their request.

the political-economy and morays of the host society. In the U.S., this includes the acceptance of the process of racialization, that is anti-Black racism. It also includes the maximizing of opportunities by accepting a color-blind racial ideology and moving to the upwardly mobile suburbs (Yeboah 2008). But the technologies that produce digital diaspora and Ghana's cyberspace, also reflect further fragmentation in the immigrant experience.

Growing up in Kumasi, Kofi rarely spoke to his parents via telephone while attending a boarding school hours from his home. For Mantse, letter-writing was always a key part of his connection to Ghanaians at home and those abroad: As a child in school, his teachers taught basic writing via letters pen-pals, and the practice continued for him when he came to the States as a teen. For others, audio cassette tapes, pause-mixed with updates from their relatives in Ghana, or newspapers, sometimes days and months-late, consisted of the repertoire of techniques to maintain a connection with the homeland in that era of what has been termed *old media* — a description of the technologies of broadcast, print, audio records and film in the Industrial Era, where the means of content production and dissemination were limited by the high cost of production and editorial gate keeping (Lessig 2008; Chun and Keenan 2006)

In many ways, digital diaspora interactions strengthen immigrant networks, producing a strong diaspora sensibility that reaffirms identity boundaries, and these are particular around consciousness of West, Pan African identities. Kofi's participation in the Council of Ghanaians in Northern California, it's various sub-groups, and in the Waakye Club, are a means to maintain a strong sense of Ghanaian identity, despite the feeling of exile. Not only do these diaspora organization provide a ready repertoire of cultural practices and experiences that provide for opportunities for expatriate bonding, they are information networks that allow Kofi to immerse himself and his family in the contemporary life-world of the homeland.

Beyond these digital circles, participants in my research describe regular participation, via digital mediation: Both messaging and participation at important life-events such as naming ceremonies, marriage introductions and funeral dedications facilitated by Skype and YouTube. Facebook is used a public family testimonial: One of the earliest distinctions between my social use of Facebook versus that of my interviewees, was the very public listing and connecting of family members, with cousins, uncles and in-laws all listed on the former 'top friends' feature and in the personal 'About' section. For marriages especially, Facebook photo albums have been robust sites for exchange, between transnationals that once would have made it a major investment in traveling abroad. Those who couldn't afford it are suddenly have access to key effervescent life events that strengthen family ties. Depending on the level of incorporation of technology in the event, the formerly underprivileged in diaspora may now possess a position of prominence, unafforded to guests at especially large events onground.

Like many contemporary diasporas, the Ghanaian community of Northern California, does not occupy a specific "minoritized space" of an ethnic neighborhood (Laguerre 1999). This decentralized experience within an already dispersed diaspora, has produced a unique form of ethnic identity in migrant lands. Participants in this study often described themselves as being "in-between," occupying some "third space" between diaspora and homeland, between homeland and hostland. At times, the individuals describe this as a "cosmopolitan" space, or an "other" category, responding to prompts about their identity as if there were check marks on a census. The space of the "other" or cosmopolitan is articulated via diaspora connections online. "When I am here [in the U.S.], I tend to focus on things here… America has a way of changing you." (Aidoo personal interview)

Still, in his 2008 book on the migration of Ghanaians to less cosmopolitan cities such as Cincinnati and Cleaveland, Ohio, Yeboah states that immigrants sought to advance their socioeconomic opportunity by avoiding the ethnic enclaves of the Eastern U.S. seaboard, moving instead to suburban neighborhoods. He describes a pattern of settlement in the late 1990 and early 2000s in the region that mirrors the migration paths of older waves of more professionally skilled Ghanaian migrants towards areas with solid schools and newer housing: "…there seems to be a desire for Ghanaians to merge into or integrate, rather than isolate themselves from other Americans." (Yeboah 2008: 50)

In 2014, I met Mantse in Sunnyvale for a Ghanaian March 6 Independence Day celebration. The event was organized by a loose organization of Ghanaian professionals under 40 at a pricey hotel. With a hiplife DJ playing for a crowd of about 50 attendees, we talked about the differences between this celebration and a larger event held four years prior, with 200 guests in San Jose. Against the backdrop of a slideshow showing popular dishes from Ghana, scenes from the crowning of the Asantehene, and the logos of several Ghanaian Web firms, he explained to me there was another even taking place that same night in Oakland: The crowd there would likely be younger and more pan African: "We've all got different things going on. The Ghanaian community here used to be organized around clubs and hometown groups. Now it's professionals and churches" (Mantse 2014).

The diasporas communities I've interacted with in San Francisco and Chicago operate as nodes in a global network of the Ghanaian social imaginary. The Ghanaian immigrant communities in localities such as NY, Washington, D.C., and Toronto, Canada, have older histories as diaspora sites, with distinct ethnic corridors, hometown associations, churches, and restaurants, clothing stores and other shops (Manuh 2005), contemporary diaspora communities in these towns operate more as post-urban immigrant sites, reflecting the logic of neoliberalism and contemporary network flow. Most Ghanaians in diaspora I interviewed interacted with digital media that was homeland-focused. Ghanaians in Chicago, which hosts the largest annual Ghanaian-American summer festival, is often described by my participants as having a traditional hometown and ethnically-affiliated civic culture.

Conclusion

These findings have attempted to examine to describe and analyze the following conditions of Ghanaian cyberculture: 1) The unique, collective and at times countervailing approaches towards the media of connection for Ghanaians in Diaspora. 2) The range of digital connection strategies, 3) The problems of network status across global data systems such as the Internet; 4) The variegated landscape of media innovations and practices that collectively construct a new media space around Ghana. As a member of diaspora, whose role in the network is typically to supply resources from the global core to the developing periphery, (the goal of migration) — there is intrinsically an asymmetrical relationship produced via dispersion, especially if done for socioeconomic reasons (Cohen 1997; Manuh 2005; Brinkerhoff 2009). However, the network is multivalent in the respect that Ghanaians in diaspora rely on a connection with the homeland for their sense of identity-making. While diasporic consciousness provides for a sense of self-making in the context of alienation in the host country, the production of Ghanaian life-world is in many ways dependent on homeland ties, enhancing diasporic consciousness towards a global identity of being Ghanaian or perhaps transnational, and also of being thoroughly Ghanaian, rather a national hybrid. I explore the further dimensions of this in the section on "Afropolitanism."

Digital diaspora becomes here it's own form of technical practice as the experiences onground between diasporans are reconfigured by real-time information consumption and social encounters with others in diaspora and in the homeland. As digital actors, they construct diaspora in their habitus and participation in the social imaginary of Ghana outside of the homeland, via the interaction, consumption and production of digital cultural from Ghanaian Web sources (online radio, blog posts, YouTube feeds), from other diaspora actors (social media and bloggers in diaspora), and from other sources online (CNN, BBC, Yahoo! News). This digital sociality includes not only Twitter exchanges and blog posts, but more often not is enabled via discrete exchanges using mobile phone and text messages. At times these, this is the product of mediation of the experience of living in diaspora, at times the production of digital diaspora is a discourse generated in their interactions. Other times it is the material networking, or transfer of durable goods personal technology circulation/transfer via mail and shipping, or via digital downloads.

Among my research participants, the impact has been to transform the diaspora experience from one of an isolated immigrant community, often shaped by the political-economy of the hostland, into a globally connected public, a node in the network around what Michel Laguerre describes as the "transglobal networked nation" (2009). Digital diasporas experience greater daily contact with the homeland, and digital technologies allow for more synchronous participation in news cycles, cultural developments, and other forms of media. Benedict Anderson's examination of the role of media in the construction of the nation-state, can be extended in this sense to experience of digital media: If the nation is produced through narratives of collectivizing media as Anderson asserted in his notion of the socially constructed "imagined community," then the global mediascape whose center and focus is Ghana then constructs both a "network nation" and the digital diaspora through the digitally mediated imaginary of Ghana in cyberspace. In Chapter 5 "Afropolitan Mediascapes," I discuss at length the emergence of broad African consciousness around this global flow and popular media, its history as a product of Pan African movements, and the implications on these developments with regards to identity and globalization.

By examining the vigor with which the research participants I've interviewed adopt, discard and reinterpret new forms of ICT, I believe an accurate description of Ghanaians as digital bricoleurs is produced. These practices of innovation, as described work against the normative habitus of the Internet, as imagined and marketed from technology's mainstream: Silicon Valley and global telecommunications industry, at both a governmental and enterprise level produces a discourse on network normativism as the if the digital praxis of the West and it's Internet globalizes *all* media flows. For many Ghanaians, the Internet as a network and communication tool, like many aspects of the infrastructure in these postcolonial republics, is highly unreliable: Troubled by relatively few physical paths of external data and connected via spotty and highly proprietary data networks, the symmetry of the West's connection culture and those in this region of the developing world are hardly equal. This Internet fails to connect users in diaspora to individuals in the homeland with the seamlessness promised via the rhetoric of the "network society.' The process of bricolage (Lévi-Strauss 1966; Hebdige 1979) is an attempt to overcome this technological asymmetry. These practices allow Ghanaians and others working against obvious and invisible digital divides as inventors and early adopters of new forms of IT, especially the mobile Web — practices which actually affect the lofty visions of a truly global information system.

CHAPTER IV: HACKING DEVELOPMENT

"We're from Africa. We hack things."
— tweeted from Nigeria's first MakerFaire, Lagos 2012

Introduction

In this chapter, I examine hacking as a form of tactical media aimed at achieving technological symmetry in the world-system: Hacking denotes agency and invention by my research participants in Ghana. In my observations of Ghana's civic hackers, the language of the IT industry has been adopted to advance an economic and political development agenda towards greater openness and democracy. In society at-large, hacking — what I would define as transgressive computer coding — remains an ambivalent practice, with both criminality and productive civil engagement being advanced by skilled computer programmers. In this chapter I offer an alternate genre of hacktivists, that of the *activist developer*. This I believe denotes a particular kind of hacker, in some ways specific to Ghana and the diasporic developer community, whose work as computer professionals, social media enthusiasts and civic activists is done to advance alternative routes to political participation in what they perceive as a closed political system. Well-known hacker groups such as Anonymous and WikiLeaks have shifted the discourse around hacking away from profiteering and towards radical politics — the outcome reflected in the ways that the Occupy movement in the U.S. and around the globe (including places such as Nigeria), articulate a protest agenda against the status-quo. Ghana's *activist developers*, no less technically savvy or politically motivated, have instead focused on a rhetoric of reform and openness that combines elements of an ICT4D agenda with a push for more democracy. Not simply entrepreneurial, many of the activist developers I spoke with between 2011 and 2013 also produce apps and programs aimed at serving the public good and advancing horizontality in the Network Society in general.

Hackathons, an Introduction

Hackathon – a definition — A marathon computer programming session in which contestants (hackers[35], programmers, stakeholders) compete to develop a novel solution to an IT challenge.

Since the early 2000s, hackathons have been used to kickstart innovation in Silicon Valley and beyond. At these day-long and all-night code wars, convention is seemingly thrown out the window, as stubbly-faced, sweaty, mostly male programmers and engineers devise unique solutions to the prize-challenges in ways that are sometimes quick and dirty, but most of all effective. As a competition, the allure of hackathons for host-companies, developers and civics groups has been to generate a massive amount of creative thinking around a common problem or company issue. In such environments, the rhetoric of "innovation" as a business development philosophy is openly embraced. "Innovation Hubs" have proliferated across the globe in recent years in such places as San Francisco (I-GATE Livermore), the University of

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35 Hacker is a colloquial term for a skilled computer programmer. Initially used in elite tech institutions and computer programmer circles as a superlative for the best code writers, the term took on an air of notoriety in the 1980s and '90s, when underground computer techs began describing their illegal activities as hacking. In the current era, the terms hacking and hackers have been given a positive connotation by an emerging class of IT workers in Silicon Valley and throughout the world, describing highly skilled, efficient and resourceful programming abilities and programmers. see, Levy 1994

Florida, and in Africa — perhaps the most well known is Nairobi's "iHub." The U.S. government's Wilson Center for International Scholars released a report in 2013 titled "The Power of Hackathons," a policy paper citing government calls for IT-driven development in a number of areas dear to tech enthusiasts: "… [M]aking data open and machine readable can fuel entrepreneurship and innovation" (Bastian 2012: 3).

Beyond the enthusiasm for market-possibilities of new inventions and user-tools, hackfests are part of the mystique of the IT industry — what keeps it grounded in the culture of computer programming grit. The contests keep coding cool by immortalizing top programmers with wins of technical prowess completed in a set amount of time: 12 hours, a few days or weeks. Prizes include cash, the latest gadgets, internships, jobs, and most of all bragging rights.

Levy (1994) provides an early description of hack competitions taken to similar levels of exhaustion at engineering schools in the 1960s. But open competitive hackathons find their precedent in prize-winning contests held by illegal "black hat" hackers in the late 1980s early 90s, especially the community of phone hackers, called phreakers. Meeting in nondescript locations, publicized on bulletin boards of the nascent Internet, these contests were feats of coding skill, where targets such as the security systems of the IMF and Pentagon were probed for weaknesses and privileged data (DEFCON n.d.; Levy 1994). The all-night, all-day sessions were hardly glamorous, but depending on the prize or hacking target, the fame was legendary for these small geek communities. Along with tech-oriented mini-conferences such as BarCamps, THATcamps, FooCamp, MakerFaires that have emerged in the last 15 years, hackathons have become part of the informal training of young computer programmers and Web developers today. They are an opportunity to network and look for investors; also a chance to level up and gain fame (Thomas 2003).

Hackathons have made their way into popular circulation only recently, with the most dramatic interpretation via the 2010 film *The Social Network*, which chronicled the early career of Mark Zuckerberg. In one scene, hackers take turns completing sheets of code in-between shots of alcohol at a house party. There's music and DJs, and a crowd of cheering coders and girls. The prize for these young students is a job at pre-everything Facebook. In reality, a hacker meet-up is hardly thrilling. There are no cheerleaders. Caffeine, not alcohol, is the drug of choice for relentless code writers. This is how it works: A sponsoring host issues an official challenge to code writers and participants prior to the start of the contest. The day of, potential collaborators spend the early hours pitching rough ideas and mingling with other participants who then form developer teams. Once set, the teams hole themselves up in a corner, typing until their eyes bleed through. The competitors are prickly, argue over programming esoterics (*HTML5 or Java? Python or Ruby?*), and are curt with outsiders: Their aim is to make a program or platform that will earn a top prize before the contest time expires. [36]

Today, hackathons have become mainstream. Many of the biggest are being sponsored by civics groups looking for creative new ways to get innovative minds involved in government and public service (Goetz 2010; Abaffy 2013). Cities as diverse as Oakland and Palo Alto have held civic hacks since 2011, inviting contestants to develop applications from their public data to

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[36] My observations about hackathons also based in-part on my participation in hacker events in the San Francisco Bay Area as an organizer and participant, as well as the research referenced. In the summer of 2011, I brought a group of UC Berkeley students to Oakland, Calif.'s first civic-hack "Code4Oakland." In 2013, I was a co-organizer of University of California's first EduHack, attempting to produce tools for prospective students.

improve public services. The finance and tech services company Salesforce offered a $1 million prize for winners of its hackfest in 2013.[37]

Between 2011 and 2013, I attended various IT capacity building sessions with interviewees, including hackathons, and Ghana BarCamps aimed at what I would term *hacking development*: Utilizing ICT for a development agenda both inline with the conventional implementations of ICT4D from the NGO sector, and in independent emergent ways that advance the goals of sustainability, wealth building and political engagement in Ghana.

ICT4D as a set of development agendas has been categorized by Qureshi, Kamal and Keen (2009), Sey (2011), Kleine (2013) and others as two distinct agendas: 1) ICT4D as an outcome project advancing economic growth and integration in the global economy: These projects typically focus on getting the poorest Ghanaians and other target communities to use new technology to advance their economic self-sufficiency and the nation's GDP; 2) ICT *and* development projects which advocate for sustainable development, in ways that do not advance inequality or environmental degradation. These projects also attempt to introduce new media appropriate to the target communities' needs and adoption strategy. The World Bank's Human Development Index is it's main gauge. This field also finds the work of social scientists who explore the impact of new media on the lives of the target communities, not necessarily oriented towards an implementation goal (Kleine 2013).

The academic and professional research field of information and communications technology for/and development ultimately advocates for a social transformation through technological innovation and adoption. It is a highly interdisciplinary field whose participants range from NGOs such as the World Bank and United Nations, to commercial firms looking to enter developing markets with high impact media (e.g. Sproxil, SoftTribe), as well as scholars who mix practice and research in the field (Eglash 2004; Donner 2006). While computer-mediated development early-on focused on the use of desktop PCs and media centers, the expansion of the mobile phone industry in Africa and the Global South world has introduced enormous potential for development (Horst and Miller 2006; Arunga and Kehora 2007).

The interest in ICT4D is ubiquitous at multiple vectors of the IT industry in Ghana. In an effort to be seen as a leader of innovation on the continent, in 2003 the Ghanaian government established the Advanced Institute for Technology Innovation at the Kofi Annan Centre for Excellence in ICT referred to as AITI or KACE. The center was formed in partnership with funds from India, in order to facilitate India's IT industry and business relationships in Ghana. International aid agencies that focus traditionally on women, education, health, rural access, and infrastructure, have begun to branch out seeking to use IT as a resource and as social objective in their programs.[38] Tele-medicine is seen as a panacea for rural health work, with camera-phones being outfitted for diagnostic optics. Strengthening access to the computer centers (Akakpo and Fontaine 2001), Internet (Falch and Anyiamdu 2003), and mobile phone networks (Overå 2005) have also been a key agenda, with the idea that target groups, especially the 50 percent of Ghanaians residing in rural areas, could reap tremendous benefits from being wired. In all, many ICT4D projects focus on linking the poor, marginalized and informal business sector to tech-enhanced infrastructures order to produce rapid and transformative change, with varying degrees of success (Slater-Kwami 2005). During my last visit to Ghana in 2013, Catholic Charities was financing a project to survey youth about mobile and Internet habits. The Danish government

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37 See details at http://salesforce1million.challengepost.com, Retrieved April 2014.
38 Based on a survey of all World Bank Projects 2011-2013, Retrieved at http://www.worldbank.org/en/country/ghana/projects/all.

and NYU's Center for Technology and Economy Development were administering projects in all of the above fields, utilizing network engineers to wire rural communities with Internet, put smartphones in the hands of farmers, and create online educational platforms.

IT-based organizers in Ghana like GhanaThink, DevCongress and GhanaDecides which I talk about in this chapter are different in that they are efforts largely initiated by local information champions, rather than foreign stakeholders. Though they may seek international funding, partnership and exposure for their work, the agendas of these civic-hacker groups emerge through their experience as entrepreneurs and via offline participation in Ghana's civil society. At BarCamps, elites and middle class students convene with entrepreneurs focused on sharing their personal development strategy, especially with regards to their use of social media to make connections, both locally and abroad. While GhanaDecides was supported by the state and foreign stakeholder organizations such as USAID, its staff and volunteers were already active in the social media and technology development community in the country. One online producer created the Web site and app 233Law, that provided users with an SMS version of Ghana's national constitution. Another blogger and avid Twitter user produced the Oderko app, which provided profiles of members of Parliament. Some were independent entrepreneurs and students who also worked for other NGOs focused on tech development such as the Meltwater Institute. The membership of their organizations was hardly exclusive and important meet-ups for participants in all these communities, like the VIM! series entrepreneurship meet-ups and BarCamps became events for them to socialize and get updates on their shared agendas.

In the section that follows, I provide an analysis of discourse and encounters at key hacking events and online, in order to construct a contemporary profile of tech entrepreneurs, online media activists, and IT-led development in Ghanaian cities such as Accra and Kumasi. These encounters have revealed for me a landscape of IT practices in Ghana which I described in previous chapters, and in ways I will elaborate on further here as they impact efforts at technology innovation and networking for Ghanaians in the homeland.

MPower Payments Hackathon: Oct 2013

In 2013, I attended a hackathon that was uniquely Ghanaian for its typical infrastructural woes and, more positively, for the set of innovations devised specifically for the Ghanaian tech landscape. MPower Payments, the hackathon's major sponsor, was the latest software project of a successful mobile phone content firm smsGH. The owners, inspired by the boldness of Silicon Valley, had spent two years researching electronic payment laws in the United States and Ghana in order to set up an insured and licensed online transaction firm, a service typically unavailable to the vast majority of users in Ghana. Since the rise of 419 scams in the early 2000s (Bastian 1999; Burrell 2011), much of Sub-Saharan Africa lies behind a digital red line,[39] with Western financial companies and services such as eBay and Amazon.com refusing to cross it for service delivery or commercial transactions. Ghanaians wishing to purchase cut-rate electronics, books or other wares via these sites are almost completely shut-out from this e-commerce: The typical work-around as described to me by hackers at the event that day, and numerous contacts working in Accra, is to have a friend or relative purchase those items online for them and once receiving the products in the U.S. or U.K., send the packages on through for delivery in Africa. The costs involved present a prohibitive tax on the transaction, making purchases of this kind almost

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39 Redlining historically refers to the practice of racial discrimination in the United States by real estate brokers and banks, seeking to keep African Americans out of white neighborhoods and business districts.

unreasonable, except for highly sought after and revenue producing items, such as enterprise-level routers and data switches for the self-employed network engineer, or car parts and other appliances.

This process is hardly straightforward. It often requires that the intended purchaser from the continent also have a bank account or credit card with an address somewhere in the West. Few online markets will ship their wares to African destinations. Associates abroad can't always be trusted to complete the transaction or actually send the goods. An item could also be stolen easily once it was received in country. From the perspective of political economy, such a transaction chain typifies the conditions of unequal trade that characterizes the relationship of economic periphery to the West (Amin & Pearce, 1976). Even African elites are not spared: the double and triple costs of these transactions require high mark-ups and social maneuvering, the strategic activation and manipulation of social and technical networks. As one of my contacts reiterated about this digital red lining, "It is part of the sanction," that is, a mechanism of postcolonial scorn from the metropole, foregrounded in everyday commerce.

MPower had overcome this barrier by incorporating in both Ghana and the U.S., and had recently signed agreements with Ghanaian banks and U.S. financial institutions such as PayPal, which formerly lay on the other side of the transactional divide. I am told later that this entrepreneurial savvy was inspired in-part by a line from the Denzel Washington film *American Gangster*, in which a veteran-turned-drug dealer cuts out the middle-man, using U.S. military planes to transport heroin from Asia directly to Harlem ("What's the line?" says the company's CEO, "*I go where they go get it.*")

Working with a IT development group, DevCongress, the daylong hackathon was meant to attract coders who could deploy MPower in new businesses and via novel apps. The platform itself is Web-based, meaning it works primarily from an Internet site, with functionality for mobile phones. Prize money is offered for the top team at GHC2,000 (US$1,000) and an opportunity to continue developing the product with their firm. The organizers provided three catered meals, free T-shirts and stickers, and a party at the end of the day. The contest was held in one of Accra's newest "co-working spaces," the iSpaceGH — a shared office-space with open and modular furniture, glass-partitioned meeting rooms, and a full kitchen. The windows and walls are painted in Google rainbow. Google's local office along with a U.K. media foundation helped kickstart funds for this social enterprise — the director, FiiFi Baidoo, a former Google-Ghana employee says members and clients pay to rent offices in the workspace. The hub sits at the top of a conspicuous six-story white building in the central Osu district. A catering business is run out of the first floor. Across the street are local chop bars, shabby housing in various states of completion and a few new businesses on the southside of Oxford Street (Quayson 2014). From on high, one can see an impressive landscape of Accra condos and construction cranes, but also straight into the courtyards of people in need of the most basic elements of urban development: no sewage, garbage piling up, shanties and irregular looking construction, no running water, children not enrolled in school.

From another direction, the Atlantic shore is at its back. The building sits just a few hundred feet from where nearly all of Ghana directly links to the global Internet: 5 high-powered fiber optic cables emerge from underwater having traveled from Europe and other parts of the continent. Landing stations along the shores of Accra initiate global data ports for the most familiar telecoms such as Vodafone, MTN, GLO, MainOne and Expresso. Over 30 terrabits

transmitted daily, in a country that according to some accounts had at best 5M of bandwidth in 2005.[40]

When I arrived at the contest on a Saturday morning, Internet had been down awhile, and WiFi boosters were being unwrapped. The teams were working steadily, however: the mundaness of writing code and tweaking user-interface at full bore by now, as pimple-faced young men gazed in consternation over their laptops (Dells, Acers, and more than a few MacBooks). Despite any technical glitches, the hackathon was underway. As I talked to young developers watching them Photoshop images, writing code, cq-ing the interface, it becomes clear that these programmers are very green. The majority of the hackers age 18 to 25. Half are students or engineers doing a gap year of national service. A few work for the telcos or banks and other tech companies. Some of them are first year students at the Meltwater Entrepeneurial School of Technology (MEST). Others have been involved with DevCongress, coming to free workshops on code writing, social media, and open data projects. Among the 40 contestants, there are only two women. Such youth is a hallmark of developer scene in Accra. In three years of fieldwork with IT developers in Ghana, networking at trade shows, policy conferences, app awards ceremonies, hackathons, cybercafés and other IT centers, I rarely met a coder interested in app design over the age of 30. When I did, typically, they were senior developers and managers with established firms.

During a visit to headquarters of one such enterprise, Herman Chinery Hesse's firm SoftTribe, the age gap seemed inescapable. Hesse is a charismatic organizer, a programmer, and businessman in his 50s. At the Spartan mansion that serves as the developer home of his software company, most staffers are typically a good 20 years younger than him, the receptionists straight through to the project managers. The firm's principles are bit elder in their 30s and 40s, serious and suited. In almost no office setting do I meet programmers with more than 10 years of experience. Among the older hackers, there are a few who went to engineering school: The majority have migrated to their field, learning code languages and networking protocols along the way.

Alex Adeji, the chief spokesman for MPower, is one such figure, having initially studied chemistry in college. In his 30s, he says his age is always an issue in business meetings, venture-capitalist dealings, at banks, with U.S. and Ghanaian government regulators ("We have no old guys on our team," he says smiling.) He describes a recent dispute in front of a city judge dealing with a zoning complaint for his business: The first thing the judge talked about was his age. The magistrate was shocked that "the youth" could be responsible for this two acre block of construction, with a pair of 5-story office buildings.

Having graduated from Kwame Nkrumah University for Science and Technology (KNUST) in the early 2000s, he and a fellow science major decided to become Web entrepreneurs, teaching themselves code and going back to school for business degrees. His partner, Kojo the company's chief technologist, studied electrical engineering in college. His education as a computer scientist has been largely informed by free classes and lectures offered on the Internet. During a lull in the hackathon, he shows me the syllabus and videos of an MIT professor he is particularly found of. He and another programmer argue over who holds the best "machine learning" courses, Stanford or Harvard.

Despite several references to Microsoft mogul Paul Allen and Apple Co-founder Steve Wozniak, this hackathon would not likely qualify as a typical geek fest. Between programming,

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40 Mark Davies, founder of Busy Internet and Esoko *interview* (2012)

instead of bland danishes and boxed lunch, a kitchen crew set-up an impressive array of local foods: *banku* and talapia, jalof rice and beans, fried plantains, crab stew and fufu. In the spirit of charismatic self-development that seems to exude everywhere in Accra, an earnest motivational speaker comes to advise the young programmers on how to effectively conduct oneself as an entrepreneur as the judges deliberated winners. Cocktails and palm wine are served out of coconut shells by a caterer who is building his reputation as a premium drink mixologist. A DJ played a 45 minute set of dance music, the CTO and a few others hoping to hiplife music.

Still, what set this app contest apart from the hackathons one might find at a developer event in San Jose was the uniformly social impetus for most of the teams' final designs. Of the 7 projects, the majority are social-welfare oriented apps, attempting to bridge multiple technical and social divides. These include an "African CrowdFunder," a local Kickstarter for large social projects such as sanitation in rural villages or seed funds for small businesses. A separate donations app was produced, intended for key life events in Ghana — gifts and support for naming ceremonies, weddings and funerals, an important activity that sometimes isolates living outside the homeland.

Nearly all of the projects incorporate SMS-based updates and payment interactions, attempting to reach the majority of users in the Ghanaian market who connect via simple feature phones — the slim 12-key devices sometimes referred to as "candy bars" because they take up about as much space. Android-based, free apps dominate the final products. While smartphones are only beginning to now penetrate the market deeply, the majority of high tech phones work off of this Google mobile platform, owing to the program's openness and flexibility in its product development, licensing and pricing. There are only a few commercial projects: An aggregator portal for consumers seeking online deals from local businesses, and an Expedia-like local fare hub featuring Nigerian, Kenyan and Chinese airlines. One app fashions a Bitcoin payment system to MPower along with a Bitcoin generator.

Despite the localization of the designs for the geographic specificity, what is striking about the iconography of the winning programs is their decided lack of Ghana or African presentation. The programmers crib images of white Westerners from the Internet for their marketing. All of the programs are done in English, with little if any local language options. One app is curiously labeled Caridad, Spanish for "charity." While the developer explains the origin of the name before the final judging, he gives no reason why. These aesthetics reveal perhaps an understanding about the intended user. Perhaps in an unstated sense, these designs reflect the self-depreciative understanding of Ghana's position in the tech market and the worth of seeming Western: Better in-quality, more profitable, and secure. As if the West is synonymous with technology itself.

One is left to speculate as to what level these apps are not meant to serve the needs of the Ghanaian market. Perhaps the developers are imagining a broader audience for their apps, to be downloaded by college students in California as well as Kumasi. For some app developers I spoke with on separate occasions, it was important that their products not be seen as Ghanaian, carefully burying information about the developers on products' Web sites, so as to seem American or European: Relying on the presumptions that inform the U.S. tech industry configures its users as white and affluent. As a seasoned project manager remarked during a separate interview, "We have lots of software developers [in Ghana], but we still demand software applications from outside" (Swaniker 2013).

Caridad and two other-donation apps are the top winners. In another novel experience of the local hackathon, the organizers at the end of the day agreed to give the other contestants

GHC500 towards their projects, if they finished by end of the week, and offer the losing competitors a chance to continue developing software with the tech firm. In it's most productive capacity, these developer-driven tech meet-ups are demonstrative of the sophistication, ingenuity and business savvy of young computer programmers who consciously position their professional trajectory alongside the start-ups of Silicon Valley.

The fragility of the technical infrastructure highlights the ever-present notion ways these digital elites must negotiate their practices of innovation, through an assemblage of technical disjuncture: In many ways they are dependent upon larger processes beyond their control, systems that when failing, immediately point to global asymmetries of power and enterprise. But, also by examining both the process and products of these innovations at hackathons and similar tech-driven meetups in Ghana, a clearer understanding of the valences of technological adoption and diffusion in this part of West Africa is revealed.

Hacking In Ghana

In one way, hackathons in Ghana represent a kind of high-tech localization (Chandler & Deming 2011) of the tech subculture of Silicon Valley. The innovation and mainline base practices here also demonstrate a particular valence of tech practices that link Ghana to a kind of global user one particularly dominant in the developing world as well as for peripheral citizens in cities of the Global North, where digital divides produce a common trajectory of tech use — reliance on SMS mobile communications, low-bandwidth Internet use, PC-oriented computing (Python code, Java platforms), Android mobile programming, open source tools and free (at times illegal) software exchange. Hackathons and other tech events reveal a network of tech innovators, and a geography of tech development in the capital Accra, making important the places of tech innovation, despite the immateriality of tools such as software and online content.

For my purposes, the hack events I attended also represent a performative ritual of tech sophistication and at times acculturation, as if to signal that appropriation of certain IT could be also be portrayed as achieving a kind of modernity imagined as "Western" and "developed." The actions and rhetoric of these tech practitioners advanced both sensibilities of a local, "native" technoculture as well as a desire for modernity in the material conditions of the postcolony. Participants quipped that "Accra's a very democratic ecosystem. It's really buzzing right now, a lot things going on." The Web site for OasisWebsoft, whose CEO was an active participant at tech meetups in Ghana states, "We are committed to building infrastructure that will ensure that the West African sub-region is not left behind in the continuous evolution of information technology."[41]

Working through Disruption

What make hackathons in Ghana remarkable are not initially positive things: For starters, power is always an issue. As the lead up to Ghana's 2012 national elections was underway, a dubious step backwards in the country's image as an exceptional African civil society began to take shape (Shipley 2009).During a month long stay in Ghana in 2012, scheduled and unscheduled load-sheds shut off power to the city center (including the embassy-rich Osu, Labone, and Asylum Down neighborhoods). The outages lasted between 4 and12 hours each day, sending Internet users to cafes and businesses with generators. Power was even down in the tech industry corridor on Ring Road, home to Vodafone, the telco which owns Ghana's Internet

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41 See http://oasiswebsoft.com/aboutus, Retrieved Jan. 2014.

R.A. ROYSTON   RE-ASSEMBLING GHANA

backbone — the hardwired system of landline connections, and traffic exchange routers that provide the majority of interconnections between data networks in the country. Rolling blackouts have been an aspect of life in Ghana for decades (Rupp 2013). The urban core is hardly spared from rationing. The spate of electricity scarcity in 2012 was caused by a sea accident in the Gulf of Guinea in September of that year. A shipping tanker damaged a West African transnational gas pipeline fueling two of Ghana's countrywide power generators (Quartey 2012). While considered an unanticipated crisis at the time, the "lights off," as blackouts are called, have since significantly lowered availability of electricity in Ghana. This is the infrastructure of "breakdowns," Larkin writes about in his work on radio and film in Nigeria (2008).

During "lights off," Ghana's cyberspace ignites with missives, prayer-like pleas and desperate tirades decrying the weakness of the grid system and it's public utility, Electricity Company of Ghana (ECG). Along with Twitter and the web forums of MyJoyOnline and GhanaWeb, the Web site LightOffGH.info is one clearinghouse for regular blackout information in Ghana's southern districts and the capital Accra. The site was started by a young female programmer and entrepreneur in October 2012. Tweeting under the tag @LightOffGhana1, Efia Nkroman has lead a personal online crusade to highlight and critique the management of electricity under ECG, as well as to compile data on blackouts.[42] Her tweets are only a small representation of the proliferation of #lightsoff hashtags online — quips with humorous, angry, sometimes resigned tweets and blogger posts challenging many of ECG's policies, including its pre-pay subscription services which often result in a lack of notice before account shutdown notices, and scheduled and random shutdowns of electricity for long hours at end.

One particularly bright Friday morning during that trip in 2012, I paid a visit to the Ring Road offices of an important Ghanaian tech firm. Wiping away the dust and sweat from my face, I assumed the office's AC would be my saving grace from what has turned out to be a 90-plus degree day. I skipped the company's elevators upon entry: A few nights earlier, I opted for the stairs when leaving the building for a different event. Ten minutes later, the power in that part of the city went out, and there were no back-up generator for the elevators. This morning, I stalked-up 6 flights of stairs in the heat, arriving at the lobby only to see the firm's employees reclined in their break room, heads down on their desks, wilted by the lights out: No building generators in a software house means little work can be done. Patience in such conditions is not simply virtuous, but an emotional necessity: Getting angry seems useless and is a bit socially unbecoming. By no means is the atmosphere care-free.

Despite the resignation as well as defiance in the face of continued power failure, "lights off" represent a crucial sociotechnical condition for IT workers in Ghana. At the nation's premier engineering school, Kwame Nkrumah University of Science and Technology (KNUST) in Kumasi, outages are pre-figured into classroom. Small beige "power units" straddle computer arrays in classrooms and development labs: When the energy goes out as it did twice during a short trip I paid to the campus in 2012, the boxes will protect against surges and blackouts. If you're plugged in, you are supposed to have 10 minutes to save your work and logout. If your computer hasn't cut out, the reality is you have at best a few minutes. Sometimes it's better to work with your laptop, unplugged, if you're fortunate enough to own one. Only about 5 out of 30 students had them in this Introduction to Programming class. Instructors and students tell me that when the lights off come during an exam, students will have to handwrite their code on paper.

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42 Unfortunately as of 2014, the site has few hits and the user forums are not active. Like many Ghanaian online ventures, this may represent a disjunct between apps built by Ghana's lead users, and the social media practices of the majority of IT users in Ghana.

The ability to survive and thrive in this environment is not to be underestimated. There is a certain skill in handwriting mundane C+ that will probably produces a lasting grammatical fluency among some students.

The obstacles are outlined clearly in white-paper circulated to other developers online in the 1990s by Herman Chinery Hesse, a programmer who has been running, SoftTribe, Ghana's oldest and most recognizable software development firm since 1992. The treatise, "Tropical Tolerant Software Systems for Sub-Saharan Africa," (Zachary 2004) lays out potential affordances of an Africa-based tech infrastructure, stating that IT on the continent should be "Power Tolerant, Communications Tolerant, People Tolerant, Capital Tolerant," i.e. composed of systems that can deal with power failures; systems that can deal with failing Internet exchanges; systems that are simple enough for illiterate and non-English speakers to use; and ultimately tools that are not cost prohibitive.

The situation is analogous to another key infrastructure in Ghana: water. Municipal water is ostensibly serviced by a government apparatus with an extensive system and maintenance regime, the Ghana Water Company. Despite this technical system, consumers in Ghana uniformly maintain 500 gallon "polytanks" adjacent to their properties as a reserve supply. When the public water runs out from municipal pipes, one typically switches to using the backup tanks. Most of these are not very complex. There are no capacity sensors or health monitoring for infectious diseases. One must routinely pay for a servicer to fill these tanks. The owner has to deploy motorized pumps to get this reserve water into their home or business. Individuals must maintain the sanitation for these tanks independently. Once more, this water cannot be used as drinking water, which is typically sold by different firms, in the form of home water fountains or palates of bagged water. The client-service relationship imagined as the province of urban citizenship is vacant here; a peripheral set of techniques is required to maintain one's connection to this basic necessity. This form of self-sufficiency demonstrates how the conditions for meeting the basic sanitary needs for building owners does not simply consist of plugging into an already existing and functional grid. Participation in this civic service, supposedly a benefit of metropolitan life, is hardly guaranteed for even the most financially secure proprietors in Ghana. The uncertainty of the grid produces an ever-present sense of vulnerability and also pessimism that technical processes in the urban environment can be consistent, and enable other economic ventures in everyday life. The tactic of self-service water is necessary given the likelihood of disruption to something otherwise said to be a basic urban amenity. Redundancies such as these absorb the energy of the proprietor and social agent in attending to other rhythms of their daily life and other economic opportunities. This way, the condition of underdevelopment impacts not only systems that are in-place, but also ability of social agents to maneuver successfully within and beyond the local infrastructure.[43]

Electricity can be just as complicated, if not more so. Even at hack contests sponsored by the some of the larger software firms, the lights go out and back-up generators aren't always the saving grace. Issues don't start and end with the grid. While problems at any hackfest anywhere

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43 In a horrible illustration of this reality, a water crisis has been developing since the beginning of 2014, following a major rupture of a water main from a treatment facility to Accra. Neighborhoods have been dry, and fights have been breaking out at urban wells. As the government directs GWC to fix the problem immediately, the director of the fire fighting service tells the media that there may be no water to fight fires in the city. "Households should have some bottles, some wells, they should have some reserves available for accessibility as far as emergency. That is precisely fire prevention that is firefighting. Unfortunately a lot of people don't have those resources available, and I don't think there is a way to help them in case of emergencies." (http://www.myjoyonline.com/news/2014/February-23rd/water-shortage-gnfs-says-it-may-not-be-able-to-fight-fire-outbreak.php). Ironically, among my primary twitter lists of contacts, little mention has been made of this crisis, which is likely impacting the least advantaged.

are to be expected, in 2012, I attended a Google and WorldBank Open Data boot camp for hackers, journalists, and would-be developers. A power outlet overloaded, burning out a row of PCs brought in for the event. The effect was to cast a bit of resignation on already awkward day: While many of advanced programmers assembled followed knowingly as experts from Kenya and South Africa explained the intricacies of "data scraping" and visual design, solidly half of the participants were traditional journalists who muddled through exercises in Microsoft Xcel. Despite being adept at social media tools such as Facebook and Blogger, many had never used the MS Office suite.

During a two week visit to Ghana in October 2013, I still experienced lights off, half of the 14 days I was in-country. Many of my contacts remarked however that the load-sheds and generator use in Ghana pale in comparison to infrastructural instability in Ghana's West African rival Nigeria, where most businesses and homes are required to have backup generators. Ironically, Nigeria's IT sector is much more robust and profitable than the IT sector in Ghana.[44]

Electricity notwithstanding, Internet is just as essential for hackathons. Organizers typically dangle caches of documents and databases to the contestants as raw material for apps and developers, exclusive information that is sometimes made publicly available for the first time online. Hackers crib code from their other online projects or other hacker's projects, programs that could be stored on the Web via cloud storage services. Information, competitor apps, images and design for the front-end user interface can also be found online, especially graphics, fonts and other Web furniture. My experience at hackathons in Ghana is that even when the Internet is working, WiFi access frustrated competitors to no end. Inevitably, the co-organizers would trot out new hotspot stations and Internet boosting devices — WiFi USBs and addition landline Ethernet connections, fresh from their packaging — and begin a game of strategic positioning around the room. PC to Mac network communication sometimes never gets worked out.

The instability of Ghana's end-user Internet access makes hacking in these scenarios harrowing. Many a sweaty hour is spent waiting for the power or the Internet to come back online, so that data-compiling, design, testing and file-sharing can begin. Time is typically the most precious commodity at these events. When lights go off, all stops, as if the world comes momentarily to a halt. All the excitement and fervor of being cutting-edge, on the avant gard of industry and commerce gets sucked out of the room, the oppressiveness of tropics sweeping in, as air conditioners and other electronics cut out. Typically, the ennui is batted away with humor, gossip and teasing.

After such a setback, programmers get busy making due. For the enterprising programmer, that means "tethering," or connecting one's laptop to an Internet-enabled mobile phone via a cable. Tethering is also accomplished by creating a mobile Internet "hot spot" on one's mobile phone, and allowing remote access to computers and other devices via WiFi or Bluetooth short range radio signals. Rather than simply out of convenience or obsession with gadgetry, tethering often felt like a survival strategy, and many programmers who don't already use a USB modem

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44 With more than 150 million people, Nigeria is fully twice the size of Ghana; Lagos it's metropolitan center 20 million in number, while Ghana's capital Accra holds 4 million. But beyond demographics, when I asked IT professionals who had worked in both countries, the biggest difference between the two markets was the level to which Nigerian businesses were interested in adopting technical innovations. Nigeria's economy is currently flush with liquid investors such as banks and firms seeking a competitive edge for their business with new software and infrastructure. By contrast, such institutions in Ghana are conservative. Most entrepreneurs in Accra tell me they would never be able to get loans from a bank, much less sell such an institution a unique enterprise software platform designed specifically for their business needs. "They always want to know if it's Microsoft or Cisco. They don't trust their own," is an often used quip. The effect is that Ghanaian code writers cannot typically market software platforms that they have devised themselves, and local innovation is spurned in favor of notions of an "industry standard," the hallmarks of which established by Western product design and branding.

with it's own 3G subscription (called 'dongles' in Ghana), tethering is their go-to. Given the complexities of getting Internet from the ISP relay stations to the end-users' "last mile" (the network industry's term of connecting users through copper or fiber optics or radio, through DSL and Cable modems and then WiFi or Ethernet to their home or office) — bringing your own Internet everywhere is an absolute necessity for Ghanaian tech users.

Hacking Development

From my experience, hackathons in Ghana showcase a unique reimagining of Silicon Valley's start-up culture, none of which speaks to Africa's imagined primitivity. Looking for technology in Africa today has taken on the air of digital safari. Interlocutors routinely search for "authentic" tech innovation on the continent, as if tinkerism and improvisational bricolage were the only sciences available, a narrative as one might read in blogs like AfriGadget. [45] Started by the iHub's founder Erik Hersman — a white Kenyan committed to IT development on the continent — the Web site profiles African tinkerers, local inventions and mechanical improvisation. The blog attempts to highlight for the world, the skills, but more importantly desire of Africans to achieve some sort of technological symmetry with Western materialism. AfriGadget purports to be "Solving everyday problems with African ingenuity," featuring stories on home-made helicopters pulled together with scrap metal from roofing, and biodiesel engines running on manure. It is a project that attempts to do a service, but in many ways provides a voyeuristic gaze for an audience of geeks and technocrats. With the Other firmly established/reinforced, these outlier narratives attest to singular cases of African invention, but one interpretation might be that despite these creative ventures, the persistence of poverty on the continent seems natural, and its problems incapable of being remediated: Perhaps even simply a problem of African governance. At the same time, rather than acknowledging ongoing asymmetry between the West and the Global South, these peculiarities distract from evaluationis of the broad needs of development; infrastructural and economic reforms that could pave the way for more innovation and openness in Africa's marketplace.

It precludes in some ways, the damage that pre and postcolonial policies have done to African industries, and the extent to which unequal trade has done to what might otherwise be profitable tech industries in Africa: gold and mineral extraction, oil, commercial agriculture. That is, these narratives of technological exceptionalism ignore a process of underdevelopment centuries in the making (Rodney 1981). This gaze also reinforces the erasure of other local industry such as mineral extraction, oil, as well as large-scale technoscience on the continent, evident such projects as Ghana's Akosombo Hydroelectric Dam, the troubled Kaiser Aluminum, Ghana Atomic Energy Commission and its nuclear science program, all projects initiated during the 1960s in the newly independent African republic (Osseo-Asare 2013; Miescher 2012). With Afrigadget as its filter, the techno voyeur renders even these industries exotic or invisible. Thus, there is an impulse in the anthropology of innovation to look for technology in Africa that speaks to both the 'primitive' and the highly technical, while ignoring the making of modernity inherent in these projects (

This impatience with the foreign gaze was evident during an interview I had with the president of a Ghanaian start-up, when my line of questioning around tech practices pushed for something more than SMS and Android applications. "All you guys from the West want to come

45 AfriGadget is located at http://www.afrigadget.com. The site was created in 2006, by Kenyan-born Erik Hersman, who also blogs as "The White African," (whiteafrican.com) though he no longer contributes to AfriGadget.

here looking for the 'African technology' … It's not [in] some device made from rusted metal and springs" (Adeji 2013). To say that information technology in Africa is not relativist, however, would be to ignore the unique conditions that produce cyberculture practices such as "flashing," phone-sharing, *sakawa* or the mobile Web. Indeed, in the section preceding this, I attempt outline the specific features of Ghana's unique tech-ecology, conditions which allow the remarkable practices of Ghana's digital elites to stand-out locally while making global connections to the more wired parts of the world.

Locating innovation

A key trope of technological diffusion among my Ghanaian contacts is that "been-tos," "burgers,"[46] and "returnees" have been the chief source of innovation in the homeland. During interviews with Ghanaians in diaspora and in Accra, many echoed this sentiment, particularly with regard to consumer electronics and some social media practices. The hypothesis is that tech adoption comes chiefly to Ghana from diasporans returning home from the holidays or schooling and trips abroad, bringing the latest gadgets. The economic downturn in the West and market growth in Africa contested this trend for a few years in 2011 and 2012. My research contacts stated that when visiting home, often their aged-iPhones were laughed at by young professionals in Accra using larger and trendier Android devices, European-brands, and adventurous China phones. But the rub reveals both a contested reality and insecurity about the impetus of innovation in the diaspora/returnee and homeland relationship, particularly when it comes to developments in the tech industry, and development in general.

In Ghana's tradition as a transnational hub both historically and in contemporary memory, returnees and foreigners have been instrumental in developing IT:

> • Nii Quaynor, founder of NCS' one of the first ISPs on the continent spent over 20 years working as an engineer in the United States before returning to Ghana to capitalize on the lack of IT infrastructure there.
> • Herman Hesse, SoftTribe's chairman, was born in Ireland, educated in the U.S. and worked as a software designer in England.
> • Patrick Awuah, the founder of Ashesi University, was a program manager at Microsoft who lived in the States for two decades before relocating back home and devoting himself full-time to the development of the school.
> • Mark Davies, founder of Busy Internet, Accra's largest Internet café and an early supporter of Ghanaian start-ups, is a naturalized-American citizen from Wales. He spent 15 years a journalist and media proprietor in the States before coming to Accra.
> • Jorn Lyseggen, founder of the Meltwater Institute and chief project developer is a Norwegian national.
> • Ato Ulzen Appiah, blogger and organizer with GhanaThink, spent 10 years in the U.S. as a graduate student at Syracuse, MIT and Stanford.

The IT industry in Ghana has depended upon a flow of highly skilled engineers, administrators, businessmen, and managers (entrepreneurs) for its development for decades. During the 1970s and 80s, these tech pioneers were scientists and managers who, if they returned after a lengthy education period, typically had some connection to government. In many ways

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46 Burgers refers to Ghanaians who have travelled abroad as seasonal workers. A particular subset of these transnational actors, were students who worked in Germany (Hamburg) during their school breaks, and typically returned to the homeland flush with European currency. Hence the nickname "burger." See (Akyeampong 2000).

this was facilitated by the expansion of visas to Africans following the Immigration and Nationality Act of 1965 (Zachary 2002; Wilson 2004; Burrell 2011).

As is the pattern for many Ghanaian elites, or the elite-educated, going abroad for education became a rite of passage. Not that this was a guarantee that all top industry workers will go abroad, but transnational aspiration becomes a part of the life project (Manu 2005; Arthur 2008; Okpewho 2009).In the colonial era and soon afterwards, these individuals were often referred to as "been-tos."[47] Indeed, this is the story of Ghana's first president, Kwame Nkrumah, who spent 10 years in the U.S., then the UK before finally returning home to lead the pro-independence movement. The long-term diasporic experience of African professionals such as Nana Yewo and Kofi Aidoo, engineers and scientists whom I chronicled in Chapter 3, speak to migration at the end of 20th century. One version of the changing relationships between diaspora and homeland technology exchange can be explained this way: By 2005, as social media began to proliferate at home and in the West (Web 2.0), several other ICT conditions began to take shape on the continent. Mobile phones became widely available, affording daily communication between the diaspora and homeland. Internet access expanded. These developments in many ways collapsed the disjunctive nature of diaspora, as transnational sociality began to be mediated in real-time.

In Ghana, cybercafes like Busy Internet were beginning to be go-to places for eager Web entrepreneurs and anyone needing to use computers (Addo 2012; Swaniker 2013). The tech community at this period essentially consists of garrulous risk takers like Mark Davies and Herman Chinery Hesse, trying to figure out how to monetize an emerging market, or the likes of Nii Quaynor, systems-builders with key institutional ties. At the same time, Africans studying in the physical sciences and engineering in the West began to reach a critical mass (Manuh 2005).Online forums for African students were among the earliest Web sites that took shape, with universities such as Harvard and MIT providing hosting resources and servers for the nascent virtual communities including Naijanet, Leonenet, Zambia's Chrysalis magazine, and Okyeame — a forum for professional Ghanaians living in the West (Schaefer 2006; Everett 2009).

By the early millennium, homegrown developers like George Swaniker start to migrate to the tech industry, seeing the growth in IT in the West, the expansion of the Internet in Africa, and success of local ISPs such as NetAfrica, AfricaOnline, and Quaynor's NCS (Zachary 2004; Wilson 2007).Ashesi opens its doors in 2002, and a year later, the government's IT incubator and education clearinghouse the Kofi Annan Centre for ICT Excellence (KACE) was opened. The impact of this is felt immediately as students from Ashesi start to fill the ranks for professional IT workers, go onto to work in government or start new businesses. By 2008, the Meltwater Group's entrepreneur school opens, bringing Silicon Valley-style startup energy to the developer scene with cadres of recent KNUST graduates and other young computer recruits. While the early momentum around the IT industry is propelled by diasporans bringing expertise and experience, the local developer community matured by the middle of the decade in the 2000s. Those looking for a career don't necessarily need to leave Ghana, and in many ways there begins to be a shortage of skilled IT technicians in Ghana (Zachary 2002)

Many of my contacts described using e-learning in order to skill-up for the developing tech market during this period, and the trend has continued to present as entry to KNUST and schools

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47 "Been-to" *Oxford Advanced Learner's Dictionary,* http://oald8.oxfordlearnersdictionaries.com/dictionary/been-to, Retrieved March 2014. See also (Padmore, G. 1956), (Miescher and Ashbaugh 1999);

like Ashesi remain exclusive. Private, typically for-profit tertiary schools expanded in the last 10 years especially. Schools such as Central Professional Institute, Sakkim Manipal, the Accra Institute of Technology, Osei Tutu II Institute for Advanced ICT Studies, Data Link University College, NIIT Ghana College (BlueCrest College since 2012), Ghana Technology (formerly Ghana Telecom) University College, and the "ethical hacking" Shiv-India Institute Of Management and Technology offer certification in MS and C+, rudimentary and advanced programming. Other schools, offer training for the most basic of office skills work and service economy. Many of the programmers I spoke with attended some of these professional schools, many of which operate as virtual classrooms as satellites for universities in Europe and India. This phenomena is remarkable in that it makes the classroom global, and yet it siphons off income and opportunity to for local educators, as non-Ghanaian academic professionals (typically European and Indian) promote curriculum with allure of foreign branded education.

According to my interviews with participants in San Francisco and Accra, this "brain stay" phenomena reflects a desire of Africa's best minds to remain at home and promote the economy from within. The liberalization of the Ghanaian economy and politics, along with worsening economic conditions in the West, and growing xenophobia (including nativist backlashes post-9/11 and attacks in South Africa), has increasingly made the United States, in particular an unattractive place for Ghana's young minds. Herman Chinery Hesse is often quoted as stating that he continually ran up against a racial "glass ceiling" in the U.S. In my interviews with program managers in tech and the corporate world in Accra, the first thing many touted was the opportunities for advancement in their homeland, especially for Ghanaian diasporans born, schooled, and employed abroad.

This "brain gain/retain" phenomena was evident at several of the Ghanaian tech firms I visited, including smsGH and SoftTribe. Both employed diaspora returnees in key positions within their firms, but much of their raw programming talent, marketers and development staff had graduated from local institutions and worked in exclusively African markets. Many had not left for schooling or work. Regardless, skilled local programmers and engineers working at firms like smsGH, as well as niche business applications designers illustrate how the momentum has changed with regards to Ghana's digital elites. While there still may be a desire to go abroad in order to professionalize or get advanced degrees, many long-time developers spoke of how homegrown tech entrepreneurs have been the most consistent in providing profitable products and pushing new forms of connectivity. "Returnees bring some quality, and some experience that is very much needed here. Usually they give a better solution, sometimes, because of the diverse experiences that they've had. But in terms of the product itself, the people that are here, they know the environment better. It works better if there is like that fusion [on a team]." (Baido 2013). Herman Chinery Hesse stated: "A guy who's worked at Cisco or Microsoft, they can't hack it here. They've got to deal with African problems, with the lights going out, with lack of Internet. Typically they pack-up and leave. They'd have to be here 2 maybe 3 years before they can really make a difference." (Hesse 2013)

And, despite looking for re-patriates who have filled the rank of managers and skill technicians, rarely did I meet more than a handful of returnees who had spent their childhood and formative years abroad working exclusively in tech. As FiiFi Baido explained: "I don't know many people returning to work here. However, those who do return face a lot of frustration. So either they express a lot of agitation and … you know it makes it a bit difficult they settle in and get to know the environment. They are used to an environment where decisions are made first or there is less bureaucracy, the teams that you work with all possess, most of them possess

problem solving skills, and reason logically, and then you come to an environment where you sometimes have to micromanage, here."

Indeed, some of my homeland contacts described outright resentment toward the idea that diasporans are the ones driving the tech industry's development. The upsurge in public conversations about Afropolitanism has acerbated this some — that sophistication and worldliness is the province of the returnee; As if technology is synonymous with the West (Adas 1989).There is a deep sense that those who have been developing the local industry for the past 10 years are not being recognized for their contribution. Rather, that the public opinion is that the diasporans/returnees are bringing innovation to the local community.

Elsie is a social media manager at smsGH. In her late 20s, she went to college in Nigeria for four years, but otherwise has worked and lived in Ghana her entire life. The day I interview her, she is sending out mass horoscopes via text messages, a content service for mobile phone subscriptions. At her desk is a laptop which she uses to surf the Web, develop programming and make video calls. She uses a Blackberry phone, to compose SMS, and also a candybar phone used to test incoming messages and receive calls. She speaks of the growth of her firm and IT in general invoking Mark Zuckerberg as the ideal programmer and entrepreneur. She says, however, she couldn't go to America and "be a robot" working for Wall Street. She attributes Ghana's robust development to the work she and her colleagues are doing, "The diaspora has a tough time. It's not the same as when they left. A lot of people leave for the Western side, thinking 'greener pastures.' They come back and can't believe the prices. It's expensive now. I think they missed out. They should have stayed."

The notion that time in the West is itself a personal leapfrog towards modernity, that going abroad transforms Ghanaian migrants into progressive, entrepreneurial development advocates is anathema to some. Even to those who are themselves returnees. Ato Ulzen Appiah: "I strongly believe there are lots of guys who've been here, who are like us. I remember even just last week I was talking to a lady who runs a hair salon. I was helping her build a Web site and I was trying to do different things, and she was saying, 'Oh, it's because you lived in the U.S.' That's why I think this way, which really pissed me off… Because there are a lot of people [who think like me living in Ghana]. If I count among the 50 or 60 guys in GhanaThink, it's only me and two other people who were in the U.S. They didn't get to the U.S. and get an 'Ah, ha!' moment-type thing. [laughs]"

Homeland Conditions

In chapter 3 of this work, I signaled the ways that homeland tech configure diaspora connections: For those living abroad, their connection strategies with home in many ways is dependent upon sociotechnical conditions in Ghana. To explore this further, consider for example that it is typically easier for people in Ghana to call out to their counterparts living in the U.S., than the reverse: U.S. carriers charge higher premiums for international calls, than do local telecom networks in Ghana. Such factors as time, duration of calls, call schedules are determined by the praxis of homeland users. In the case of Internet telephony (Skype, Google Hangouts, VoIP), despite it being a relatively cheap form of communication, the tool does not penetrate the networked majority in Ghana. Home computers are typically scarce outside of upper income and elite use, especially outside the cities. Affordable home Internet still relies on dial-up connections, though cable and DSL systems are be becoming more common. These connections again are subject to problems of the last mile. In the end, mobile phone connection is the most reliable connection strategy between diaspora and homeland.

The reality of technological transfer between diaspora and the homeland is that quickly adopted tools in the homeland in fact force adoption in diaspora as a means of facilitating ongoing and regular ties of networked cosmopolitanism: While tech users in the U.S. can use competitive bundles of data for SMS messaging and voice calls, with the advent of 3G services, homeland users have tended to rely on SMS-web applications such as Twitter, Viber and WhatsApp to send short messages. These services in addition to carrying text messages, also transmit images and even video using a Web service, and this has eroded the popularity of phone-based SMS, as charges for text messages are typically levied per message. Low cost and bundles make SMS cheap in the U.S., but Web-based SMS in Ghana is many times more affordable for the average tech user in Ghana. My Bay Area contacts in turn were avid users of these tools, though the ability to communicate among themselves, i.e. between people in diaspora did not favor or induce this deployment of new media.

Activist Developer and Nation-Building

The relationship between homeland IT and techniques that emerge from diaspora continues to be a multivalent process. The flow of expertise in Ghana's cybercultural landscape is not confined to technical skill, however. The emergence of an elite class of media user, technologists and Web developer in the homeland has been spurred in part by the discursive politics of nation-building by those living in diaspora. Diaspora has always been seen as a reservoir of economic and technological advancement in Ghana (Koser 2003; African Union 2006). Since the political liberalization of the country in the 1990s, diasporans have been welcomed back to Ghana under the guise of technical development and continued remittances. Remittances has been a key development driver for Ghana, accounting for as much as 15 percent of GDP since the late 1990s (Koser 2003; State Department 2014).

A key development to Accra's current crop of social advocates has the been the start-up influenced meet-ups called BarCamps, conference of Web developers first started in Palo Alto in 2005. The term hacktivist is often used to describe tech-minded social advocates in the West, who use the techniques of hacking, remix, culture-jamming, virtual protest to advocate for a more democractice of "horizontal" politics in the digital era (Jordan and Taylor 2004; Karpf 2012).

> Whatever code we hack, be it programming language, poetic language, math or music, curves or colourings, we create the possibility of new things entering the world... In art, in science, in philosophy and culture, in any production of knowledge where data can be gathered, where information can be extracted from it, and where in that information new possibilities for the world are produced, there are hackers hacking the new out of the old.
> (Wark 2004).

But the ethos of hacking as a creative or generative practice meant to overcome system impediments is not confined to the technical strategies of computer use. Indeed, the notion of hacking as a social strategy and political ethos has taken root in Ghana as it has for other programmers in the West. Ghana's digital elites are among the biggest proponents of social action using IT as medium of change. As my research participants and contacts have articulated it, this is development driven by IT that hopes to advance a surge in e-commerce, skills or – "capacity" building for youth, and civic-minded innovation (social entrepreneurship) using new

media to produce social change. Typically, increasing technological savvy is not the main goal, rather, individuals I call *activist developers* (*information champions* [Wilson 2004], *systems builders* [Hughes 2004], *lead users* [von Hippel 2004] as they may be referred to in other literature) pursue improvement of access to civil infrastructure by re-thinking taken for granted approaches towards political organizing and social reform.

In the Ghanaian context, the tech community is rife with committed programmers and social media advocates who imagine dramatic social change through the use of IT for social organizing. Many of these Ghanaian entrepreneurs believe that their businesses are doing the work of traditional economic development. Frustrated with the global image of Africa's abjection, the rhetoric of the anti-establishment, fail-fast, "light and swift style" and DIY-pose of Internet entrepreneurship appeals to many of these would-be reformers. [48] The failures of the postcolony are foremost in these young developers' minds, as is the growing influence of the Protestant work ethic, writ-prosperity gospel of Ghana's ubiquitous evangelical churches (Gifford 2004). The activist developer, however, is simply not a purveyor of social entrepreneurship — a neoliberal take on social aid that positing that private firms which use free market principles to solve social issues through profit generating projects create the most sustainable development. The rhetoric of the "stop the aid to Africa" movement, and a desire for self-reliance are reflected in the DIY ethos of programmers and developers is evident in the tech industry throughout Ghana (Moyo 2009). While the critique of good governance, anti-corruption/nepotism informs a familiar notion of dysfunction in African politics (Mbembe 2001), the narratives of activist developers is typically an "apolitical" (emic use) form of discourse, aimed at energizing participation in elections and accountability in civil affairs. During interviews and in blog posts, Twitter messages and discourse online, participants routinely expressed dissatisfaction with the Ghanaian government's efforts to build job opportunities, and maintain infrastructure such as roads and electricity. These tech-minded advocates were also dismissive of traditional aid NGOs as being politicized and corrupt, or continuing African dependence on the West.

An oft-referenced 2007 TED talk by Ashesi's founder Patrick Awuah echoes this disposition. Arguing for the need of liberal arts education in Africa, the former Microsoft program lead addresses the familiar quandary of Africa's development woes into three key categories: "free markets, rule of law, and infrastructure." Here he states the central mission of his college:

And what Ashesi University is trying to do is to train a new generation of ethical, entrepreneurial leaders. We're trying to train leaders of exceptional integrity, who have the ability to confront the complex problems, ask the right questions, and come up with workable solutions (Awuah 2007)

During interviews and in blog posts, Twitter messages and discourse online, I have documented Ghana's activist developer community emphasizing the following:
- Use of new media to organize and educate the public and to increase participation in civil affairs.

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48 DIY refers to the ethos of start-up firms. Borrowing from the anti-establishment fervor the punk rock movement in the 1980s, DIY tinkerers and hackers espouse a culture of agency, or "maker culture," evident at events such as BarCamps and MakerFaires. see (Hartley 1999; Spencer 2008; Wehr 2012; Ratto et al 2014).

- Open data projects modeled on the open source movement and the WorldBank's Open Data Initiative, calling for the release and easy access to budgets and expenditures in order to increase accountability and transparency.
- Use of ICT to improve government services, including municipal product delivery, public education and government bureaucracy.
- Investment in the local IT industry to generate commerce and Ghanaian start-ups.
- Transform the scenario of African dependence on international aid by encouraging private entrepreneurship aimed at solving social problems.

This narrative runs through the work being done at institutions such as Ashesi, MEST, and AITI-KACE. BusyLabs, Mark Davies' the software development firm, currently offers two low-cost networking services attempting to link rural life to global markets: Farmerline, a price reference SMS system, and Esoko, a phone and desktop platform, both aimed at rural farmers. The rhetoric of social tech entrepreneurship even makes it's way into the projects of prosperity churches via conduits such as Pastor Mensah Otabil's Central University College and its Personal Professional Development Program. But a highly intimate experience of evangelizing #tech4change, as the meme appears in Ghanaian Twitter feeds is accomplished by a growing network of youth advocates, who've coordinated international an organizing agenda for ICT4D in Accra. The social-aims of the MPower hack winners testify to this sense of technology being able to both solve social issues and generate profit. Yet, these members of Ghana's digital elite are not simply interested in meeting the technical needs of the country's developing infrastructure: They desire to enable government reform via new media transformation. These activist developers have been instrumental to the development of new tech spaces and projects such as MobileWebGhana, iSpace, HubAccra, the Start-Up Café, Ghana Wikimedia, and the Vodafone mLab in Kumasi, as well as the Vim! developer speaker series, the online forums HacksHackers-GH, and GDG (Google Developers Group-GH).[49] These projects have all been initiated by the cadre of digital elites described in the section above, and in very few cases the work of traditional NGOs.

From my estimation, the most active organizers in this community are programmers in their late 20s and early 30s who have come through the ranks of Ghana's nascent IT industry: They are the slightly older project managers who've worked at Busy Internet, NCS, SoftTribe and other tech firms in Ghana. These individuals have been crucial research participants for my work in Ghana. Activist developers in their spare time, they work as network engineers for hire, pedaling enterprise solutions for foreign companies and local SME (small and medium enterprises) that want to go digital. Mostly independent entrepreneurs, they interact socially and

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49 Google has been tremendously influential in promoting an innovation culture in Accra, supporting the Vim! Series, paying for speakers at OpenData events, and hosting an annual Google Entrepreneurship Week. While their social interests are yet to be articulated, their interest in market development is blatant: In 2011 and 2012, Google Ghana personnel canvassed the middle-class and upper income neighborhoods in Osu and Labone, offering to help small business owners get email, and sign up for the social network Google+. At the same time, the University of Ghana was adopting Gmail as their internal communications service, and encouraging the use of their free online tools for use in the classroom. They had recently hired Ashesi professors to research the potential impact of semi-smart phone adoption among working class workers in Accra with a free-phone project. In the commercial field, Google was promoting an e-commerce marketplace, GoogleTrader-Africa, envisioned as a local alternative to Amazon.com. While in Ghana during these efforts, I attempted to interview Estelle Akufo-Sowah, longtime manager of BusyInternet who has been Google Ghana country lead to discuss the diffuse embedding of Google in Ghana's local developer community to no avail. While I have to speak with a Google Ghana rep at any length, the Internet moguls intentions in Ghana and Africa as a market seem plain: As a leading provider of open-access online tools, the California tech giant has only to gain in a market that is poor in institutional infrastructure, such that freeware and cloud-based technologies remain the best ways to produce content online and engage in ecommerce. Three of the young developers I interviewed at DevHack Hackathon participated in the Google Ambassadors program which flies nearly 200 students across the world to a set location for a week open source tools training, and energizing speeches by Silicon Valley social entrepreneurs.

professionally in the tightly knit developer scene, dropping in on hackathons, running mentoring sessions speaker series, and volunteering at events such as Ghana's BarCamps. Their work troubles the usual impressions of the geography of technological diffusion as popularly imagined in both tech industry, mainstream media and in public discourse (Rogers 1996).

Activist developers form the corpus of talent behind three organizations I will describe bellow: DevCongress, GhanaDecides and GhanaThink. These three development projects reflect the ways that development and liberalization is being advanced primarily by local tech professionals in the private sector, assisted by returnees and those living abroad.

DevCongress

DevCongress, short for Developer Congress, is a programming mentorship organization started by three IT developers, who are also students at MEST. They started their project as a live version of Web-based workflow sites, online how-tos, and Q&A forums. Since the start of 2013, they have held an all-day programming conference, a hackathon, and two Google Hangout sessions with well-known developers in Accra. Their audience is young male programmers living in Accra. They aim to the be "StackOverflow of Ghana," one of the tech industry's go to advice and collaboration Web sites.

The group aims to increase the sophistication of programmers in Accra, and subsequently grow opportunity through skills-based training. DevCongress' Web site testifies to their technical as well as entrepreneurial goals:

1. To build confidence among software developers.
2. Expose developers to a rich array of resources.
3. Contribute to open source projects that have great social and economic impact.
4. Harness the combined talent and resources of the local tech community to create solutions to national problems." (*http://www.devcongress.com, accessed Dec. 2013*)

Their approach may be open and simple, but the content is hardly elementary. Mentors break down the inner workings of well-established platforms such as Google Search, looking at the code and programming tools used in its implementation. They have enlisted practitioner lecturers, including active students from schools such as NIIT and Ghana Technology University. At these sessions, experienced and novice techies give developers hard questions about their storage, design, and workflow techniques. They asked pointed questions and network code writers who are hungry for developing their own skill. In one session, an audience of nearly 50 watched online as the lead-software developer for smsGH's MPower discussed his journey through IT. Alfred Rowe is a software engineer and entrepreneur, who didn't attend traditional university. During the video Hangout, he portrays himself as an autodidact, who would flip through his uncle's engineering books as a boy, leafing through texts such as Russ Walters' *Secret Guide to Computers*[50] and books on aeronautics. He was also a tinkerer, and would deconstruct a low-power 386 IBM computer attempting to learn its functions, which would require him to have to get the device repaired on a weekly basis.[51] One of his earliest hacks was figuring out how to run the 2001 Microsoft OS Windows XP, on the 1998 version of the software, by removing most of the visual interface. Illustrating the diverse pedigree of Ghana's digital elites, Rowe said he never attended "proper college." While working, he took classes at

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50 Walter, R (1984). *The Secret Guide To Computers*. Cambridge, MA: Birkhäuser Boston.
51 Rowe, A. "eXchange with Alfred Rowe," DevCongress, http://www.youtube.com/watch?v=e2E9b6uMlXU

the trade school NIIT, paying for the courses himself and working. His two-hour online session with DevCongress starts with his love of Xbox games and inspirational movies ("A Beautiful Mind," "Pursuit of Happyness,"), while his 4 year-old son preciously interrupts. At the end of the session, younger programmers fire questions about the types of programs he uses to code with, where he stores data online, and how to shield you products from cyber-attack. All but 2 of the online queries on this Google Hangouts sessions are located in Accra. DevCongress holds these sessions as mentorship opportunities for more novice programmers, as well as a "CodeCamp" for teens, in addition to hackathons, and regular conferences.

GhanaThink

GhanaThink is a network of young African professionals who advocate for social change under the moniker "Less Talk, More Action." The organization has been in existence at least since 2001, formed by a cadre of students living abroad who interacted chiefly via the Internet and online forums. Their first projects included Web resources for Ghanaian language speakers, and a robust Web forum linking to members' blogs. The group migrated towards a physical transnational organization, inline with other digital diaspora formations described by Brinkerhoff (2009). Today, GhanaThink is both an online community and a physical 501(c)3 nonprofit, which carries out social development projects chiefly in the homeland.[52] In 2013, they organized a National Day of Service or Volunteer Day, on the anniversary of Kwame Nkrumah's birthday. The idea, according Ato Ulzen Appiah, one of the program chairs, was to use a national holiday that had mostly faded from public interest to spark civic action. From their Web site:

We want to encourage more people to do community service within Ghana. That's the same spirit our founding fathers engendered within our citizenry. By having volunteer or community service activities on September 21, we would be cherishing the ideals of founding Ghana and joining a national effort to work for Ghana. Volunteering demonstrates initiative and hard work, two ideals that many organizations look for while hiring. We believe that by participating in NVDay, participants would be building their CVs." (Ghana Think 2013)[53]

By 2009, GhanaThink members began to organize "BarCamps" on the East Coast of the United States, borrowing from the DIY-organizational style of Silicon Valley tech enthusiasts. BarCamp, like other DIY tech conventions puts its organizational onus on attendees' interest for the sessions. Rather than curated expert panels and official speakers, attendees democratically decide what breakout sessions will be held that day, and attend meetings of their own interest. Ghanaian BarCamps got their start in 2008 following a BarCamp Africa event sponsored by Google, held in Mountain View in October of that year. A few attendees decided to replicate the event in Accra, holding a BarCamp Ghana in December at the Kofi Annan Centre. According to Appiah, organizers soon organized a BarCamp Diaspora in Washington, D.C. in 2009, followed by a DiasporaCamp again in Washington in 2010. While the diaspora-based BarCamps have lost momentum, BarCamps in Ghana have picked up steam and inspired other meetups throughout Africa, such as a MakerFaire and BlogCamp. In 2013, GhanaThink sponsored 10 different BarCamps in total. Working with tech contacts, social partners and eager young participants, these social hackfests were held in Ghana's biggest cities, and significant regional capitals, as far as Tamale in the north, and Ho in the Volta Region to the east. The audience members for these

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52 "About Us" http://www.ghanathink.org/content/about-ghanathink, Retrieved July 2013.
53 See http://www.ghanathink.org/blog, Retrieved Oct. 2013.

daylong meetups are typically college-age students and young entrepreneurs. Mentoring sessions are an important element of these events long with professional career planning, and the talks given by budding and successful entrepreneurs, such as Soronko's Regina Agyre, an Ashesi grad, whose gone onto become an Aspen Institute fellow for her social entrepreneurship projects. Breakout sessions for the youth include one-on-one consultations with tech developers, artists, businessmen, graduate students, models and other savvy young professionals.

Nearly all of them recommend that students and would-be entrepreneurs cultivate an online presence via Facebook, Twitter, and LinkedIn. Bloggers and social marketers are ubiquitous. If a participant doesn't have a Twitter or G-Plus account, they typically do by the ends of the conference. Their work continues into other projects such as the 2013 Volunteer Code day, which encouraged developers to donate services to non-profits and church groups for a 24-period.

Appiah says GhanaThink is a NGO created by young Ghanaians to disrupt conventional notions of civic engagement in Ghana. "We are youth led, none of us do this full time," Appiah said.

GhanaDecides

GhanaDecides was a 1-year project of Blogging Ghana (written as BloggingGH) — an online writers' community — and the Ghanaian civil reform group STAR-Ghana (Strenghthening Transparency Accountability and Responsiveness in Ghana). As an NGO, STAR-Ghana provided some training, framework agenda, and funds through USAID, the EU, the UK Department of International Development, and the Danish International Development Agency, with the goal "to increase the influence of civil society and Parliament in the governance of public goods and service delivery."[54]

Launched in March 2012, the GhanaDecides spent 10 months providing a new public voice amid the media coverage of the national elections. Again, the ethos of these activist developers was that new media could provide a means of hacking the political process: In their literature and online discourse, social media and viral video were often described as "transformational tools" to advocate for a more representative election process. Drawing on the social networks and digital output of its team of employees, volunteers, and advocates, the group chiefly aimed to influence the public discourse in the election by blogging and using tools as Twitter and Facebook, spaces in many ways unpoliced by establishment media. GD benefitted tremendously from its volunteers' ties to the Ghanaian hackers: Half of the key organizers were active bloggers via Twitter and a variety of other platforms; Some are active with GhanaThink, and a few others work in the tech industry as engineers and developers. While YouTube video, tweeting, blogging and Facebook posts encompassed the majority of their output, the group also held public events meant to capture the discourse of Ghanaians who weren't using social media, especially those without access to the Internet. "The goal is to bridge offline people to the online world," said Gameli Adzhao, a science schoolteacher based in Volta region to the East of Accra (2012 personal interview)[55] Video was a key medium for GhanaDecides, and an online YouTube channel was their primary outlet for short films and video blogging meant to generate response videos from their followers. One strategy was "GHTag" – an attempt to gameify user content by asking everyday voters to add Web content via their mobile devices, answering

54 StarGhana, http://www.starghana.org, Retrieved Jan 2013
55 Gameli, now in graduate program in the UK, is a blogger who I began following during the 2010 World Cup. Coming from what he termed, "a lower middle class family," he has been a key organizer at GhanaThink Barcamps in the East.

personal questions about the elections and voter issues. The strategy was innovative: Market women from the city and high school students from rural regions were interviewed by GD workers and had their views uploaded on the channel. They also held online debates via Twitter, and roundtables via Google Hangouts, probing questions such as "Should those in diaspora be allowed to vote?" Inline with STAR's objective of civic emPowerment, these posts also probed questions about women representation in the parliament and elections, Ghana's Biometic Voter Registration (BVR) policy, the prospect of free SHS (secondary high schools), as well as detailed how-tos and what-to-expects for voters on election day.

It's likely GD's video 'Tag' game had little serious media penetration: At the height of the December election, views of GhanaDecides videos seldom numbered past 1,000. And while this might highlight connectivity and bandwidth issues in Ghana, it was just as likely a matter of exposure: Videos by political parties, and the nations premier media outlets were just slightly larger in audience, yet music videos and religious programming I examined from Ghana during this time period had much larger YouTube view statistics.[56] That said, political media techniques of Ghana's establishment seemed to be impacted by GhanaDecide's viral strategies. The Facebook page of Paa Kwesi Nduom, presidential candidate of the Progressive People's Party, was featured on GhanaDecides blogs, and soon after kicked off a mock-voting campaign on the social network with other candidates attempting to garner attention online. After a few months of live tweeting debates and public addresses, the two front runners of the 2012 election John Mahama, and Nana Akufo-Addo, began to adopt the GhanaDecides hashtags and repost many of the organizations public service oriented messages. Producers at CitiFM, a popular radio station, began to feature Google Hangouts using the hashtag #GhanaDecides, as they recorded their morning shows and interviews for an online audience. Again, the penetration of these videos seemed quite low, with Hangouts-to-YouTube videos registering less than a 1,000 views in December of 2012. But it was clear the group had captured the attention of the major political elites and mainstream media, who began to adopt some of GhanaDecides more successful online tactics, including live tweeting during debates and day-of-updates during the voting and post-election contestations.

Some of GhanaDecide's most effective impact was produced through its intimate grassroots encounters, however. In October of 2012, I accompanied a few GhanaDecides volunteers from the Google OpenData bootcamp to a public square in the middle of Jamestown, one of oldest parts of Accra, and certainly one of it's most destitute neighborhoods. Jamestown is a key Ga ethnic neighborhood, the hometown of several hardscrabble Ghanaian boxing champs who have fought their way out of the slum to gain international recognition. It is also hosts a few *zongos*, Muslim ghettos, notorious for being desperately poor; Sea fishing and the informal economy are among its biggest industry. A notorious colonial-era prison, sits vacant and desolate near dusty public football courts. There are few signs on it that would attract tourists. Amid an active nighttime market, GhanaDecides working with the arts organization, Accra[dot]Alt, screened "An African Election," a 2011 film by Dutch-Ghanaian director Jarreth Merz. The film chronicles turmoil in the country on the brink of the 2008 election, widely regarded in the international media as a model of peaceful democratic transition in Africa. Merz's film showed otherwise, illustrating how political figures, such as former president Jerry Rawlings, and zealous party activists stoked fear and rumors, producing a near state of

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56 For example, the most popular YouTube video for Ghana's NDC party is a post-election victory song featuring President John Mahama (2013). As of 2014, it had 17,151 views. In contrast, YouTube videos of Mensah Otabil, a mega-church pastor, during the same period consistently had videos with view counts over 50,000.

emergency. While violence was underreported in the press, the film highlighted a few mob attacks and riots as the parties jockeyed the vote-counting.

Screened in English, Ga subtitles seemed to do much in the way of bridge to the local audience for the film. After the screening, volunteers asked members of the crowd of 200 people in attendance to walk up to a public microphone and give their memories of the disturbances in 2008, as well as their hopes for 2012. For about an hour afterwards, young men and women and elders praised the film, and also chastised those present to not indulge in menacing behavior in the coming December. "After you vote, go home," spoke one older man, breaking his rapid-fire Ga dialect to make an emphatic point in English. The event was recorded and again redistributed through YouTube. Volunteers tweeted photos and posted to their blogs, in a strategy of mediating the local encounter and give exposure to the voices of individuals who otherwise might not have impacted the public debate. GhanaDecides repeated the strategy in several locations throughout the country, in service of it's chartered mission "to foster a better-informed electorate for free, fair and safe 2012 Elections using online social media tools." (GhanaDecides 2012).[57]

Nana Yaw Sarpong, a foreign service employee and GhanaDecides blogger whom I accompanied me stated, "There are lot of cultural gaps that we're closing. These things increase intimacy with the public… We would like to have an issue based election." On the role of using bloggers to advance political participation in a country where the Internet reaches a minority of the population he commented, "People online are big influencers. There's lots of peer pressure, people are quoting each other in their discussions. The Internet is a way to hear something else. Peer to peer networks become very important. The relevance is still there, [they're] not two mutually exclusive mediums."

However success is measured for these various iterations of activist development, they can be rightly characterized as innovative social deployments of technology as well as the rhetoric of tech development. Their subject is relevant to the lives of Ghanaians, their techniques of connection at times appropriate at reaching Ghanaians in their own tech idiom. Rather than focusing on endemic issues of poverty inherent in the mission of groups such as Save the Children and or even (ironically) the Bill and Melinda Gates Foundation, these activist developers in Ghana have effected a work-around to Africa's constant image as a place where modernity has passed by. They acknowledge, their leadership is in the urban space, where connected Ghanaians can use new media to develop rapid economic in a few sectors that have contributed to the country's rising middle class. They work within the cultural and political realities facing engaged urban publics Ghana, without being overly apologetic or presumptive give their status and technological prowess.

Conclusion

The rhetoric of hacking Ghana is meant to do more than fuel interest in technology projects. Key to organizing efforts, according to Appiah is instilling a sense of achievement that will empower young developers to innovate in an otherwise stagnant political economy. He tells me the story of an app maker who transformed the traditional marble-and-board game *mancala* into a video game, playable via smartphone as an example.

Mancala is one of the oldest games in the world. Logical and mathematic, it requires players to collect pieces (shells, stones, marbles, etc.) in small bowls, indented on a board made

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57 See http://ghanadecides.com/about/, Retrieved Oct. 2012.

of wood, and jump your opponent in a turn-based race to the end. There have been versions of mancala for apps for at least a few years. The first I downloaded in 2011 did not work, but I soon found others that did. Such gameified African expressions have been advanced by individuals such as Eyram Tekyiwa, co-founder of Leti Games. His software titles include an open source DJ interface, a street football turned-based game for Facebook, and iWarrior, an horizontal shooter game. iWarrior is significant not for the game play but for the theme and aesthetics it incorporates. A Masai warrior "bushman" in full battle regalia (skirted, mudded hair, etc.) fires arrows and spears at animals stampeding through his village. Immediately the environment and ecological dangers of life in the semi-arid dessert are brought into play. African cosmology is present as well, with spirit forces invoked through the use of thunder and ominous voices, affective media in the game's interactive design. While essentializing, the game exposes players to a degree of familiarity with East African rural life, not typically rendered in games like Resident Evil in Africa.

"We have a lot of the conversations like, 'You can do this yourself. You can do this, if you have this tool.' Look at this cool thing that this guy has done with technology. He has taken a game that we normally we play at home and he's put it on Android, and that's actually true, he's done it. So when we went to BarCamp CapeCoast, I had him present what he built… He made it for the Android app, a 3D version of it. Their eyes just go wide with excitement.

For Ato and other activist developers, the language of hacking and innovation is meant to not only access cool tools of the West, but foster a sense of emPower in their audience. The notion of confidence and achievement routinely emerged in discussions about IT and development during my interactions with developers there. Confidence, was also a key point in DevCongress's mission statement. The concept at times emerged in a circuitous way. In my conversations with staff at SoftTribe, Chinery Hesse and others said a key personal quality of programmers in Ghana was a need for "swagger," that one needed to be "arrogant" in order create systems-changing apps. Swaniker, the business manager for Subah, provided me one possible explanation: "We have lots of software developers [in Ghana], but we still demand software applications from outside."

The tactic seems to be a reaction to a certain level of self-deprecation of Ghanaian technology and the local market. Indeed, a significant number of app projects in Ghana seem outwardly focused. The Meltwater start-up RetailTower patently stated that there product is not primarily for Ghanaian consumers, but offers an alternative service to Amazon and other online markets for users in the West. RetailTower and NandiMobile (an SMS customer service tool) have won multiple awards at events such as LAUNCH, an international start-up competition based in San Francisco, and won along with mobile payments app InCharge Global at the World Summit App Awards in 2013. While the Kenyan mobile payment system M-Pesa has been touted as a unique vernacular technology to Africa's infrastructure and economy, the success of RetailTower and other Ghanaian software companies has continued to mark at divide between the digital elites and the networked majority. At times, these are made prominent in dealings between developers who are locally-focused, and others who design apps and programs based on usage patterns in the West. In 2013, DropiFi, a business started by Meltwater students, was picked up as one of "500 Start-ups," a Silicon Valley incubator for up-and-coming social media and technology firms. In an interview with CNN that year, the founders acknowledged that though their customer-relations software had been developed for Ghanaian businesses, their likely clients would be in found in the U.K. and the States. "Currently we are focused on the U.S. and international market — the U.S., UK, Canada — but in a couple of years we want to become

SAAS[58] leaders in Africa."[59] While these start-ups, have been successful in promoting novel solutions for the African market place, they have failed to become fully capitalized firms, and the audience for their innovations seems to be an international market of African digital elites, or users in the Digital North.

The commercial IT industry in Ghana is about serving a market that does not currently use smartphones or the Internet very much. The technology of connection for Ghana's networked majority consists of mobile telephony, SMS, and SMS-applications on phones (The research of this programs are beyond the scope of my research, but are reviewed well in the work of Araba Sey (2011), and others. This serves as a future area of research of interest to both social scientists interested in micro-interactions, but also marketers, as Google is currently conducting a study on such applications with professors at Ashesi). Yet, while the innovations of Ghana's digital elites may be out of step with its networked majority, the existence of such a market segmentation presents a powerful foil to the narrative of African dependence and technological anachronism, even as exploitive global tech industries such as eWaste and low-skill call centers have been making inroads in both Ghana and Kenya. Indeed a decent portion of Ghanaian apps surveyed during this research attempted to localize products for the GH market, or use Ghana's local and tribal cultures as unique market segments. Nkyea Twi is app design that has marketed a Twi language phrasebook for several years. Despite its general knowledge in the developer community, the product has had slow take-up in Ghana, likely because few mobile users can download apps, pay for apps, and if they can actually use the app. Esoko's Farmerline is available in Akan/Twi, Fante, Ga and Ewe, however. The Google-GH's search engine does this as well.

There are multiple experiences of technology flow in Ghana, some on par with the West, some that neatly fulfill the notions of a developing economy. While the discourse and techniques of Ghana's digital elites consists of entire (virtual) worlds only hinted at in Africa's most dominant mediums TV and radio, which also heavily use Twitter and Facebook, the content of digital production from the activist developer community is rarely exclusive or elitist, and it is connected to local circuits of African and Ghanaian culture. Indeed, while the progressivism implied in uses of the "Afropolitan" moniker (see next chapter) drew ire for many of my interviewees in Accra — several of the activist developers I talked to attempted to reclaim the concept, applying not to transnationals in the West, but it instead to the digital elites and professionals who have been developing Ghana's economy prior to the ascendance of Africans in mainstream Western film and literature in recent memory. Many explained that just because an African lives in New York or Chicago or Houston, hardly makes them worldly or innovative.

If there was a robust alternative to privatization and free-market capitalism in the emerging Ghanaian economy, the rhetoric of self-sufficiency, enterprise and entrepreneurship in Ghana's digital elites could easily categorized as vanguard Western capitalism, especially if these messages are being coordinated by African students attending elite universities such as Harvard and MIT. The project of neoliberalism is hardly subtle in "pro-governance" agendas for democratic reform, evident in programs such as President Obama's Young African Leaders Initiative, Harvard African Business Conference, and Stanford Africa Business Forum (Anne Amuze, CEO of NandiMobile, told me she was flown to San Francisco for a week of mentoring by the U.S. State Department in the Summer of 2013). While Ghanaian affluence can be

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58 SAAS means software as a service, an internal tech platform for businesses.
59 Porter, K (July 10, 2013)."Dropifi startup takes on Silicon Valley" *CNN*, http://www.cnn.com/2013/07/10/tech/web/ghana-dropifi-silicon-valley/, Retrieved July 2013

experienced in a range of settings, what makes these activists unique is their desire to contribute towards the market and political liberalization of Ghana in a way that doesn't simply support extractive industries or unequal trade.

On the raw aggregate — even percentage wise — Ghana remains a developing country, with 60 percent of the population making less than $5/day, and 25 percent living below the standard of living set by UN's Millennium Challenge (WorldBank 2014).The desire to increase participation in civic culture, however, demonstrates a degree of altruistic citizenship and gusto that is focuses on reform in Ghana and Africa a whole. Improving the quality of life, is a project for both diasporans and those living in homeland. And yet the tech industry, despite its robust human capital and savvy innovations is not yet a driver of the economy in Ghana. The continuing malaise of political corruption, stagnancy and lack of accountability invites a different interpretation of the discourse of social media and STEM-driven organizing in Ghana. Indeed, the smartest engineers could be working for banks, or seeking jobs in the U.S. While attraction is strong, many say they're remain in Ghana because there is much opportunity as the market emerges onto the global stage, and an ability to make change quickly in a country of under 25 million. At the BarCamps, entrepreneurship trainings, and hackathons, the digital elites spend just as much time talking about engaging in civic reform, pressuring for open budgets, and government accountability as they do figuring out how to best package and sell their apps. That said, a majority of these civic activists are well-to-do and likely come from wealthier families. What can't be discounted is the degree to which it's digital and social elites are participating in a global market place, that is zin some ways more cosmopolitan and international than that presumed to exist in the United States.

Hacking provides a new framework for development in Ghana. The notion of an African hacker (Zachary 2005), while novel, speaks to my desire to highlight how the individual practices of skilled IT technicians in Ghana reflect their pedigrees, experiences, and their social standing in Ghanaian society. But unlike Occupy hacktivists or tactical artists in the West, the activist developer is not an overt political crusader. They are social elites, or elites by virtue of their entry into the tech industry, a small but significantly growing sector in Ghana. As the influence of the tech industry grows, these individuals are becoming more vocal in Ghana's media sphere. Their connection strategy points to a circuit of elitism, one that includes diaspora flow. But the tactics are not meant to spawn simply capitalist excess, but populism in civic affairs. Certainly elite-led change is not new to social formations. One might find analogy to Marx's notion of a vanguard, or perhaps DuBois concept of the "talented tenth" (1903). Certainly the White House and other elite institutions of the West have attempted to deploy this strategy with African Business and Leadership Forums held at Harvard, Stanford, and Columbia in the last 4 years. Anne Amuze of NandiMobile told me in an interview in 2012, that she traveled to San Francisco for a week of strategy building that year, paired with a Silicon Valley CEO, paid for, she told me, by U.S. State Department.

The disconnect between elite practices and the networked majority are obvious and enduring however. GhanaDecides videos are hardly as influential as videos of Ghanaian hiplife artists, Gh/Nollywood films, or evangelical Christian media. The divisions illustrate the heterogeneousness of global technoscapes, and at times the limits of elite power. As Galloway would describe it (2007), network cultures are typically more emergent, at times unequal, hardly egalitarian and democratic as the grid imagined by Baran and others. The specific dimensions of these disjuncts I explore further in the following chapter, discussing the rise of Afropolitanism and its role in Ghana's global mediascape.

But the generative work is this: Ghana is hardly in the digital dark ages. Its technologists with an uncertain market-future, are proving to be immensely creative and resourceful given the narrative of Africa's anti-modernity, and the continuing woes of a developing economy with a tenuous infrastructure. The narratives of DIY and self-reliance are not only meant to stunt the continued system of relying on Western handouts and poverty capital of the international aid industry, but to also energize a systems "exploit," in the language of computer design. These tactics are revealing themselves to be key resources for Ghanaians who would increase the very real need for economic growth, political transparency and civic participation in an increasingly connected yet frustrated democratic society.

CHAPTER V: CONCLUSION
TOWARD AN AFROPOLITAN MEDIASCAPE

Introduction

Running, like you been down-graded/This is dedicated to all my natives… It's time to build a new foundation / 6 billion ways to live chose one/We ain't going to let anyone savage our culture/ So rise up my people/ Let us see what you got/ 6 billion ways to redeem somebody.
DNA & Soulfège (2011) "AFropolitan."

Digital diaspora is a contemporary practice of strengthening ties to the imagined community of homeland through use of ICT. From my research, it seems a chief means of that connection is established through the invention of new techniques of consuming information, primarily about the homeland, but also of Ghanaians living throughout the world. Those consumption practices are also reflexive in that they become prosumption (production/consumption) (Ritzer and Jurgenson 2010) via the cultural production and discourse taking place in Ghana's cyberspace — Web blogs, social media, personal phone calls and also in popular culture. The particularism of Ghana's cyberspace has developed primarily through micro-encounters online, but it has been broadly shaped by the asymmetrical infrastructures of data flow that reproduce the core-periphery divide in the Network Society. The tactical interventions of digital diaspora and hacking development are two strategies that reflect the ability of Ghanaians, and other actors in the Global South, to innovate against this asymmetry, but these flows are part of a broader reshaping of African representations via new media. This expanding *mediascape* and its transformative discourse is partially revealed in the controversy over the concept of the *Afropolitan* within academia and public culture.

In this concluding chapter, I discuss what I am calling the *Afropolitan mediascape*, as a space of flows for Africa's new politics of representation, and discuss the ways new media and online culture have co-produced this discourse. While Afropolitanism has been critiqued as an elitist concept, I will attempt to draw attention to its historic dimensions and the ways in which multivalent practices in diaspora and cultural production redeem the concept from some of its exclusivity, through the incorporation local, diasporic, national, transnational, and Pan African flows. This is done through examination of Afropolitan discourse online and in public culture, and in the interviews with my research participants.

Here, I will take a brief foray into cultural studies in order to point to illustrate some ways to think about what I believe are important sites for the future investigation of technology and agency in contemporary African diaspora studies: New media and its role in re-assembling the imagined communities in the era of the post-nation.

'What's an Afropolitan?'

Afropolitanism represents an identity germane to the current period of globalization as Africans seek to seize the means of representation amid a moment of prosperity and Western intrigue. African celebrities have enjoyed unprecedented exposure through mainstream Western media in the last 10 years especially: actor Idris Alba (Nigeria/Ghana/UK), Chiwetel Ejiofor (Nigeria/UK), Oscar-winner Lupita Nyong'o (Kenya/UK), rap artist Akon (Senegal/USA), soccer players Michael Essien (Ghana) and Mario Balotelli (Ghana/Italy); actress Thandi Newton (Zimbabwe/UK), and fashion designer Oscar Boatang (Ghana/UK).

As such the criticism of this attention to African celebrities in the Western media serve to bolster the claim that the generation of such "new" identities simply serves to advance capitalist forms of hegemonic incorporation: Africa has enjoyed greater investments in the financial sector with 7 percent GDP average growth annually for the past 5 years. A measure of prosperity developed in the post-Recession millennium, and the "explosion" in mobile phone adoption proffered as evidence of the meme that began circulating online, "T.I.N.A.: This is a new Africa." The ruptures of a new representational discourse are especially poignant in the U.S. where Ghanaian and Nigerians in the American education system in particular enjoy great success, even as African Americans continue to lag in performance behind whites.

But the label as a specific subculture, social identity, media ecosystem and global practice is remarkable in that it is one of the first of new post-millenial social representations, largely emerging out of the continent, which attests to Africa's growing agency in global flows.

Since the wide circulation of the term "Afropolitan," inscribed in print by author Taiye (Tuakli-Wosornu). Selasi in her 2005 article "Bye Bye Barbar," the concept has had an uneven adoption. Selasi defined it there as "Africans," not just "citizens in the world." For Selasi and other contemporary African artists, including musician DNA (aka Derrick Ashong), the Afropolitan moniker points to one whose "roots" are in Africa, yet reflect the multivalent flows of transnational interactions, with multiple heritages, travel and citizenships. Ashong is a Ghanaian-based in the United States, and a cable TV announcer and blogger online. He further developed the concept at a 2011 symposium co-hosted with Selasi and at the Houston Museum of African American Culture "Africans in America: The New Beat of Afropolitanism."

While the term Afropolitan has a morphed in some circles from a marker of pride to a neocolonial divider, among a wider African digital public, Afropolitanism as a notion has sustained a resilience some would have hoped to see dissipate.

In October 2011, London's V&A museum sought to answer "What does it mean to be Afropolitan?" [60] co-hosting a forum the with blogger MsAfropolitan and the young African professionals and lifestyle magazine Arise. Radio Netherlands soon afterwards asked of attendees at Amsterdam's African Young Professionals gala, "African, Dutch, or Afropolitan?" (RNW 2014). A fashion show of the same title followed soon after. Also in 2012, CNN produced a news segment on elite professionals such as architect David Adjaye about "living the Afropolitan life."[61] In 2013, two leading exponents of African transnational life, author Selasi, and MacArthur Foundation "genius" awardee Chimamanda N. Adichie, released novels featuring globetrotting Afropolitans torn between home and abroad. Critically lauded Ghanaian rapper Blitz the Ambassador released his an album in 2014 titled "Afropolitan Dreams." And the hashtage proliferates online via Twitter.

Dissenting at a 2012 African Studies Assocaition-UK conference, noted author and African literary scholar Binyavanga Wainaina stated unequivocally, that "I am a Pan Africanist, not an Afropolitan" (Santana 2013).[62]

Despite the seeming ambivalence or even backlash against the term, it has come to be a popular marker for some African transnationals negotiating identity amid what some label as the

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60 "Africans in America; The New Beat of Afropolitans" Symposium, http://houston.culturemap.com/eventdetail/houston-museum-african-american-cultures-africans-/; Arise magazine, http://www.ariselive.com/articles/defining-the-afropolitan/95788/; MsAfropolitan blog, http://www.msafropolitan.com/

61 Tutton, M (2012 February 17). "Young, urban and culturally savvy, meet the Afropolitans." http://edition.cnn.com/2012/02/17/world/africa/who-are-afropolitans/index.html, Retrieved Jun 2012.

62 In the research for this article, I briefly met Chimamanda Adichie at a book store in San Francisco as she promoted *Americanah*. I asked her what she thought of recent interest in the concept: She also replied, "I am not an Afropolitan."

21st century African Renaissance: an Africa post-Apartheid, with GDP growth, developing markets, and unprecedented stability and international interest (Boateng 2013; Makokha 2011). And just as the term Afropolitan has begun to penetrate African popular cultures and transnational publics, the term is being simultaneously rejected by many of the same intellectuals, who see it's easy cooption by marketing agency and lifestyle elites: Afropolitanism has become a brand as much as it has become a movement, or social formation, and the ensuing culture conflict over its use threatens to deaden its productive sensibility, and create greater cleavages between linked African transnational sensibilities.

Regardless, the impulse behind Afropolitanism signals a real and lived transnationalism of not only as Mbembe states, a post-Apartheid moment, but also a post-Pan Africanism. It signals a desire to be *seen* as African, and to free African people of the paternalistic baggage of Africa as a place of anti-modernity, continually in need of development aid and "good governance."

Through the work of Selasi, Ashong, Blitz and others, the notion of an Afropolitan has been re-asserted as a foil to such depictions, engaging in what Stuart Hall describes as the techniques or "practices of representation" (1997).

In my research, theme of being transnational — not merely of being *in diaspora*, but being capable of constantly crossing the life-worlds of Ghanaians living at home and abroad — as an new form of identity for Ghanaians living in abroad repeatedly came up in interviews with Ghanaians in diaspora. Some expressed broad sense of being beyond nationalism was evident, and talked of diaspora, in particular as a kind of "third space," unwittingly borrowing terminology of transnationalism from theorists such as Homi Bhaba (2004). Among those living in Accra that I interviewed, many spoke of being cosmopolitan, and cited not only a Pan African history of this form of transit, but stated explicitly that new media was producing a new sense of being African in this way. Interestingly enough, few of my interviews took up the term "Afropolitan" as a sign of their personal identity (indeed some were quite ignorant of the entire controversy). But in it is clear from their personal histories, lifestyle and outlook, the experiences described as "Afropolitan" in contemporary African fiction, film and intellectual discourse fit the bill.

In my estimation, the development of Afropolitanism highlights two notions: First, that Afropolitan as a distinct experience of globalization is enabled, or rather revealed, by *new media* (IT, mobile phones, the Internet, digital media, cybercultures); Second, that as a social movement, the project reveals contiguous and competing experiences of globalization that reaffirm Appadurai's notion of pluralistic global flows — a collectivizing and variable "landscape" of social experience for networked and de-territorialized communities in the Network Society. Certainly a key flow is the mediascape. For Appaduari, *mediascapes* represent one of a number of multivalent flows experienced in a transnationalism enabled by information systems such as the Internet, a range of techniques that taken collectively allow for the global emergence of culture via "real-time" time encounters (Appadurai 1996).

> *"What distinguishes this lot and its like (in the West and at home) is a willingness to complicate Africa – namely, to engage with, critique, and celebrate the parts of Africa that mean most to them. Perhaps what most typifies the Afropolitan consciousness is the refusal to oversimplify; the effort to understand what is ailing in Africa alongside the desire to honor what is wonderful, unique."* (Selasi 2005)

Afropolitanism serves as a multi-sited, translocal[63] identity that is embedded in contemporary structures of information flow: media such as mobile devices, satellite TV, multimedia radio[64], Facebook, Twitter, blogs, the Internet, and virtual communities intersecting with and informing real cohorts of transnational actors.

Selasi's essay primarily appeared online; Achille Mbembe's essay "Afropolitanism" appeared in an art volume about "Africa Remix," in which digital pastiche and transnationalism is firmly invoked (Mbembe 2007). The African blogosphere has been a major site of solidarity and contestation for the concept: Paul Carlucci of *Think Africa Press* says "The Afropolitan experiment is over…." in his review of Adichie's and Selasi's 2013 novels (Carlucci 2013). And yet, blogs like *MsAfropolitan* and the French language Afropolitan Facebook community[65] proliferate. South Africa's luxurious *The Afropolitan* online magazine has been among the vociferous supporters of the concept as a lifestyle and brand, using the motto "Inhaling Freedom, Celebrating Life."[66]

Yet, narratives of Africa's abject status (Mbembe 2001; Fergusen 2002, 2006) remain ever-present in public imaginary, stoked by films such as "Blood Diamond," "Lord of War," "The Constant Gardner"; web controversies such as "Kony 2012"[67]; even via video games such as "Resident Evil 5" (Capcom) and "Call of Duty: Modern Warfare 3," (Activision) where players can first-person-shoot hordes of Black militia men and victims.

As a researcher new to Ghana in 2011, I was struck by the worldliness of Accra, and by extension Africa, at times contrasted with cities in the U.S.: Deeply Christian and deeply Muslim; multilingual, multiracial, multinational, and trans-regional; Details lept out at me such as the French air conditioner, power generator instructions in Cyrillic; the Chinese tourist, the Dutch embassy, DeLoite and Touche; Mercedes and Renault and Ford, Nokia phones, China phones, Indian tech schools, Jamaican music, Latin telenovellas, German DJs, Senegalese food. On Quayson's Oxford Street (2010), I spoke with young Africans casually talking of visiting other budding African cities, what Gikandi (2011) terms the "Afropolises" of the new millennium (Legos, Dakar, Addis Ababa, Nairobi, Luanda) — cosmopolitan cradles representing a networked public sphere, a poliscape of experience, across anti/colonial history, across a historical legacy, and linked by what Garvey described as "a shared destiny." This world is clearly connected. The backlash against Afropolitan has attempted to highlight the already embedded experiences of the translocal that have defined Ghanaian society since before the nation-state.

In my fieldwork research with Ghanaians in cyberspace, the concerns of globally facing Afropolitan publics often are seemingly grounded in the hyperlocal: Parochial politics on GhanaWeb; rap debates of Tema vs Accra; Ghanaian music that circulates from home to abroad, yet with DJs tied to U.S.-centric East and West Coast alliances. Then there are other networks:

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63 Translocality refers to the interplay of local, regional and global in the lives of social actors. Many of the translocal experiences can be distinguished in the transnational processes that impact individual and community practices; the practices and processes are the result of both local conditions and global conditions, but the experience is localized to a specified space.
see Gupta, A (1995: 2009); Washington, D (2007).
64 By multimedia radio, I refer to terrestrial radio stations that have proliferated in the African marketplace since 2000. Rather than being bound to the broadcast bandwidth for FM and AM, these stations are increasingly using online streaming to reach wider African publics. Stations are streaming popular shows live on the Internet and recording them later for viewing via YouTube, as both a video and audio form. Mobile phones equipped with radio receivers as well as Internet access also expand the reach of these stations. Such streams are available overseas to diasporic audiences, and some can be Retrieved via smartphone apps.
65 Afropolitans (France), https://www.facebook.com/afropolitans
66 Afropolitan magazine at, http://www.afropolitan.co.za
67 "Kony 2012," http://invisiblechildren.com/kony/

the Galas in Amsterdam; Mr. and Ms. Ghana beauty pageants in Germany and other host countries; Christian missions in New Orleans, Oakland, and other American cities.

Such Afropolitan circuits of social media, of privilege, of work and travel, highlight the variegated landscape of mediated globalization. Some divides are very clear: During the San Francisco reading for *Americanah*, Adichie played down the representational power of Nollywood films**,** saying, "We can actually do better. This is not our best cultural production." The diversity of these reveal Appadurai's global disjunctures against a simple unifying concept of globalization.

Against this, Afropolitan social actors are producing a 21st century African identity that seeks to represent the *worldliness* of contemporary African life, especially the cosmopolitan flows that shape the self, community, and work in Africa and the diaspora, especially via the continent's rapidly expanding urban centers (Simone 2004). What the concept attempts to do, is to put a name on worldliness about Africa, specifically, the actors associated with the continent, who live these multi-sited lives: Born on the continent/diaspora; home for holidays/work in West/Africa; etc.

Selasi is of Ghanaian, Nigerian, and Scottish ancestry, born in London. The Yale and Oxford educated author and photographer states via her Web page that home for her is New York, Rome and New Delhi. In her 2005 treatise she states, "While our parents can claim one country as home, we must define our relationship to the places we live; How British or American we are (or act) is in part a matter of affect. Often unconsciously, and over time, we choose which bits of a national identity (from passport to pronunciation) we internalize as central to our personalities. So, too, the way we see our race – whether black or biracial or none of the above – is a question of politics, rather than pigment; not all of us claim to be black" (Selasi 2005).

That a transnational identity marks the African condition is hardly a new phenomena: The focus of 20th century African and diasporic social and political movements has been the acknowledgement and exercise of links between Africans dispersed globally, ties created by the flows of modernity: Slavery, European empire building, Africa's colonization. Gilroy's notion of the Black Atlantic as spatio-temporal ethnoscape for African (and non-African) social actors, culture, agency and trade is but one of these African-centered geographies (Gilroy 1994).

Achille Mbembe, Brent Hayes Edwards and others have illustrated how the *négritude* movement, and 20th century Pan Africanism conferences highlighted both the unifying and multivalent nature of these connections, especially through media forms such as newspapers, missives, novels, and letters (Mbembe 2001; Edwards 2003). Add to these circuits, the Afrocentric flows of the post-Civil Rights cultural nationalism in the form of Rastafarianism (Walters 1995; White 2007) and the "home-boy cosmopolitanism" of hip hop (Diawara and Kolbowski 1998; Neal 2013), as well as heritage tourism (Pierre 2009). There is little doubt that the deployment of *Afropolitan* as an idealistic expression and a description of lived African bodies renews traditions of transit — in this case working against the anti-modern portrayals of Africans in the global imaginary.

Self-described Afropolitan, playwright Mwenya Kabwe (2007) offers this description : "[We] are a community of international wanderers who vacillate between feeling at home anywhere and nowhere…. there are in fact ties that bind. Among them, I believe, is simply the commonality of being charged to make sense of a collection of disparate experiences that include a relationship to the African continent. It is a virtual community on a number of levels: we typically do not literally group together en masse, and among the first locations to identify in each new neighborhood is invariably the cheapest internet café" (p. 48).

The thread is that Afropolitans have no singular home, outside of a strong rootedness in Africa. *Home*, rather, is the "liminal space" of citizenship as opposed to a particular race, nation, city or tribe. However these feelings are held in tension amongst Afropolitans, this social construction marks African transnationals who are constantly in motion.

The work of Selasi, Ashong and other culture producers attempts to valorize this global circulation of contemporary African life, but questions can also be asked of how class impacts Afropolitan experiences; How do these narratives of restlessness reflect and shape broader notions about African identity? What are the technical and discursive affordances of these rhetorical tropes, given the background of these social agents?

'Hello Babar': A Narrative For The African Renaissance Redux
In a 1971 Laurent Brunhoff children's story "Babar Comes to America,"[68] an elephant king leaves the jungles of Africa, exiled to the U.S., only to return triumphantly with the gift of civilization. A relic of colonial imagination or regret, Babar the elephant makes a surprise appearance in the 1988 Eddie Murphy film "Coming to America," a film crafted by the comedian and farcical movie producer John Landis — Murphy pats a real baby elephant on the head as he passes through the resplendent garden of the painfully fictitious kingdom of Zamunda.

The reductiveness and ignorance of "Coming to America" are clear — the medieval European crowns, the painfully stiff vernacular English, etc. It is a curiously flowery depiction, in an era that was still shaking off the ghosts of post-Independence despotism: Mobuto, Amin, Taylor, etc. These anti-, at best, alt-modern representations, ironically meant to provide a unifying and triumphant vision of contemporary Africans for a (Black) American audience, while also using the immigrant experience as a background for humor.

Babar is also the departure for Taiye Selasi in her consideration of the post-Apartheid transitions of trans African identities in "Bye Bye Barbar: or What is an Afropolitan?" (Tuakli-Wosornu 2005). Here Selasi commits to paper the grassroots sentiments conjured by fellow authors such as Chimanada Adichie (Nigeria), Binyavanga Wainaina (Kenya) and other noteworthy transnationals emerging in the global arts zeitgeist at the time. Selasi sketches a lifestyle and ethos for the emerging African transnationals of the digital era, beginning with a London dance party:

> *The whole scene speaks of the Cultural Hybrid: kente cloth worn over low-wasted jeans; 'African Lady' over Ludacris bass lines; London meets Lagos meets Durban meets Dakar. Even the DJ is an ethnic fusion: Nigerian and Romanian; fair, fearless leader; bobbing his head as the crowd reacts to a sample of 'Sweet Mother,'* (Selasi 2005).

Selasi asks, "What happened in the years between Prince Akeem and Queen Agbani?" that is, between the release of "Coming to America" and the 2001 crowning of a Miss World from Nigeria, Agbani Darego, the first Black African to win the crown.

What follows, in her words, is part profile, part manifesto for this emerging public whose generational charge is to complicate Africa's representation, while remaining true to both the global and local roots. "Bye Bye Barbar," recognizes the worldliness of Africa's 21st century

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68 Ustinov, P., Brunhoff, L., Levitt, E., & Melendez, B (1989). *Babar the elephant comes to America.* Stamford, CT: Children's Video Library

movers-and-shakers, while extoling them to acknowledge amid the glamour of being worldly, "that there's work to be done."

Inspired by this neologism, Achille Mbembe expanded on Selasi's concept, extending his quest for "new ways of seeing" Africa in the 21st century (Mbembe 2006). For Mbembe, Afropolitans, signal the coming of age of professionals who not only are ensconced in Africa, but have to deal with the world at-large: "Artists, musicians and composers, writers, poets, painters — workers of the mind who have been aware since the beginning of the post-colonial era" (Mbembe 2007: 29). For Mbembe, concepts such as Afropolitanism provide renewed commitments to the continent, but also a distancing of the monolithic concepts of Africa by Africans themselves that have "ossified" political and cultural innovation including parochialism and narrow contemporary Pan Africanism.

Afropolitanism is not the same as Pan-Africanism or *négritude*. Afropolitanism is an aesthetic and a particular poetic of the world. It is a way of being in the world, refusing on principle any form of victim identity — which does not mean that it is not aware of the injustice and violence inflicted on the continent and its people by the law of the world. It is also a political and cultural stance in relation to the nation, to race and to the issue of difference in general (Mbembe 2007: 28-29).

Mbembe's and Selasi's credos would be united in a mantra Derrick Ashong among others often use: "global perspective, but strong African roots" (Ashong 2013). But how is Afropolitanism different from cosmopolitanism, it's supposed broader, more universal relative? If we look again to African scholars to frame our notion of the broader notion of cosmopolitanism, Appiah provides an enduring statement embracing the moral, cultural and political: "… It begins with the simple idea that in the human community, as in national communities, we need to develop habits of coexistence: conversation in its older meaning, of living together, association" (Appiah 2006: xix).

Cosmopolitanism is a dream too. An ideal. A label that those who strive, place on a place, thus the residents, the individuals in that space, as if to mark each unit an unconscious member of a larger whole: a node in an obvious and invisible network of commerce and civilization.

It is an idea that strives to be "global," but is just as likely "European" and thus should be interrogated: Victorinox, the Louvre, the Hague, *Cosmo* magazine.

New York or Washington, D.C.'s cosmopolitanism is assumed uniformly. But in the particulars, we begin to see particular cosmopolitanism there, representing a kind of globalization, a kind of transnationalism: Manhattan, a global center of corporate finance, fashion, culture industry and media; Washington Heights, a global Latin Caribbean neighborhood; Coney Island, Eastern European and Slavic; The Bronx, Caribbean and West African communities. Whereas in the same geography, there is no "Little Accra"; Ghana's many sites are found in a few night clubs in Adams Morgan, in a market in Columbia Heights, MD; in homes in suburban Virginia: locales for family gatherings, political fundraisers for homeland elections, for music videos and Ghollywood films (Yeboah 2008; Laguerre 2006).

Cosmopolitanism represents a strivers' label[69]: It seeks to collectivize on its way to modernity. It seeks to make diversity unremarkable, to subsume it (un-interrogated) into the everyday: A mode of living. A project advocating a homogenous mind-state of globalization, urbanity. Whereas the Afropolitan ethos collectivizes those sentiments via routes that lead to

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69 *striver* is a concept of black upward class mobility, as described in Wilkerson (2010).

Africa. Whereas cosmopolitanism seeks a kind of universal recognition, Afropolitan seeks a self-recognition, beyond state, and ethnicity; a kind of particularism that is culturally, if not racially, marked.

For Gikandi, the idea of Afropolitanism firstly "… constitutes a significant attempt to rethink African knowledge outside the trope of crisis… [recognizing that] To live between cultures or languages is one important way of coping with the disorientation of moral geographies at the end of modernity" (p. 9-10).

It is striking, however, that while Mbembe's Afropolitanism originates in cities like Dakar, Abidjan, Nairobi and Johanesburg, Selasi's African transnationals are found in the night clubs of London, or as in her 2013, novel *Ghana Must Go* the ivy covered halls of academic Boston. That the tension between a diasporic and continental positionality persists in political currents of 21st century African thought is not surprising, though both of their visions of Afropolitanism are encompassing, rather than exclusive: At the core is the notion of "global perspective, African roots." What unites these perspective is not merely form or place, but a "spirit" central to these experiences as Makokha states: "The phenomenon of displacement and mobility across the limits of African spaces — physical, epistemology, disciplinary — changes across teleology and geography but the condition of humanity, of Africanity, remains existential across the expanse of the continent" (Makokha 2011: 19).

Landscapes of Afropolitanism

Sitting in an apartment in Tema, the port city just outside of Accra, I am with five young men in their 20s and 30s. They swap between a mobile phone and other devices (TV, iPad, Laptop), sending missives on Twitter, updating Facebook, messaging via WhatsApp, surfing the Web: One is a prominent blogger; another runs a center for entrepreneurs; another is a network engineer with a small firm and several employees. He travels regularly to Nigeria and Gambia seeking business opportunities and working contracts. I am privy to debates about local radio's preference for Accra rappers over hometown musicians like Sarkodie (a 2012 BET award winner for Best International Act.)

The business developer is busy selecting music, a Nigerian music channel plays in the background, with hip hop and R&B videos that have all the semblance of New York or Atlanta, but in many ways are worlds away: It's azonto, hiplife, GH Rap, sounds from Nigeria, the UK, Ghana, and French-speaking Africa: Diamond brilliant videos. There is no Chris Brown or Nicki Manaj: Rather Fuse, 2Face, Mbzel… a dizzying torrent of totally unrecognized faces, though the aesthetic, the style and stance is utterly familiar to an American. Eventually we'll end up at an ex-pat club in Accra, where they don't play any of this music, and my associates opt to leave.

This experience through a particular African mediascape signals yet another of the many valences or flows of Afropolitan life: Black American swagger "indigenized" by local media publics in which diasporic forms are also embedded rhetorically and historically (Osumare 2012). Yet these subjects too speak: sampling, remixing, constructing a new norm, that reflects the worldliness of their lives. Secondly, this cosmopolitan ethos, carried via practices such as hiplife music and broadcast programming (radio, TV and Internet), social media, mobile phones and satellite, links New York, Palo Alto, Atlanta, New Jersey, Philadelphia, London, and Tema: These practices consume the global and producing it via a digital discourse on Twitter, Facebook, WhatsApps and several local variants.

To be sure, these gentlemen represent, at least, Ghana's rising middle class, and in many ways its digital elites: But Facebook, YouTube and globally circulated media such as film are hardly the province of the privileged. Internet penetration is 17 percent in Ghana. There are more mobile subscriptions than people, but even for those with "candy bar" feature phones, Facebook is ubiquitous with over a million profiles (Dalberg 2013; Quarshie and Ami-Narh 2012; Sey 2011).

The media sphere these digital entrepreneurs inhabit has a continental focus. Though this cohort of digital activists blog about "smart development," politics in the U.S., Barack Obama, and the NBA, their cosmopolitanism is seldom as multiracial, or multicultural as the worlds discussed in *Ghana Must Go*, with its self-conscious Ivy League Blacks; eloping Chinese-Ghanaian lovers, or scenes like Selasi's club in London.

Kabwe, who claimed both Cape Town/Boston at one point, offers the usual troubled question, "Where are you [Afropolitans] from?" Are Afropolitans the patrons in the mostly Ghanaian club in Accra, sampling the same music from all over — with a bit of Jay-Z and Kanye West sprinkled in? What about Kanye West himself, a so-called "Nigga in Paris"? West Indian Rihanna, or Rick Ross, for that matter, whose on-location video for "Hold Me Back" was widely decried for showing the worst of Nigeria (Adewunmi 2011).

In a personal interview, Derrick Ashong explains, "Some hiplife probably is Afropolitan, some maybe not. Some Nollywood is, some, not so much" (Ashong 2013). What then can be made of Appiah's characterization of cosmopolitanism? That, "The well-traveled polyglot is as likely to be among the worst off as among the best off — as likely to be found in a shantytown as at the Sorbonne" (Appiah 2006: xviii).

Further still, why are the icons of Afropolitanism celebrities, the influential and the glamorous? This was the main thrust of Binyavanga Wainaina's critique or "exorcising" of the Afropolitan "ghost" at the African Studies Association UK meeting in late 2012. According to the former Caine prize winner, Afropolitans and their "digital pulp" novels — the fast-and-furious online literary works he criticized at the symposium — signal a West-focused inflection, "product driven," exhorting that "travel is easy" and "people are fluid" (Santana 2012). Indeed, the cybercultures of Afropolitanism are revealing, beginning with the South African magazine: Chryslers and jet skis, executive profiles and designer clothing. "Afropolitan" Web searches reveal guilt by association with the other brand of *Cosmo*: A club night in Philadelphia, a fashion foundation in France, couture in Amsterdam, an exclusive private party in Chicago.

Perhaps these subsume the exotica "Afro" at the expense of a kind of Afro-modernity that holds in serious tension the triumph and tradition, extreme wealth and extreme poverty, globality and the tribalist. Are these notions glided over too easily with the quip, "This is Africa (TIA)," which is to say, "This is not the West (America/Europe)"?

Do politics begin and end when the cohort is identified as a 'market' i.e. consumer demographic? To be sure, like "bling" in America hip hop, Afropolitan glamour and sophistication are also representational strategies combating the popular anti-modern portrayals of life on the continent or Blacks in general (Neal 2013). But the question of Afropolitanism's pose remains strident given the asymmetrical lag in capital flow to Africa, impacting what Ferguson says is "the enduring axis of hierarchy, exclusion, and abjection, and the pressing political struggle for recognition and membership in the emerging social reality we call 'the global' " (Ferguson 2006: 193).

Here Appadurai's exegesis highlights the pitfalls of Stuart Hall's strategic significations:

The suffix -scape allows us to point to the fluid, irregular shapes of these landscapes, shapes which characterize international capital as deeply as they do international clothing styles…. What is most important about these mediascapes is that they provide (especially in their television, film and cassette forms) large and complex repertoires of images, narratives and ethnoscapes to viewers throughout the world, in which the world of commodities and the world of news and politics are profoundly mixed. The lines between the realistic and the fictional landscapes they [audiences] see are blurred, so that, the further away these audiences are from the direct experiences of metropolitan life, the more likely they are to construct imagined worlds which are chimerical, aesthetic, even fantastic objects, particularly if assessed by the criteria of some other perspective, some other imagined world (Appadurai 1996: 8-9).

If the Pan Africanist vision was delivered through books, political theater, organizing, and marches — it's ethos always linked perhaps to African socialism — a progression has indeed incurred: Media wise, the post-colonial state was shaped by TV programming, newspaper; in diaspora, traded cassettes and video tapes (Ziegler and Asante 1992; Larkin 2008; Mudhai et al 2009). Afropolitan culture moves as fast as the local Internet service provider, mobile carrier, and DVDs distributed at markets and hair salons.

While the debate about being Pan African or Afropolitan has divided some theorists, it should also be situated among other transnational identities of Africans: slave, maroon, exile, colonial subject, refugee, migrant worker, immigrant student, and alongside the labels of volition: "been-to," scholar, activist, and perhaps central to this formation "returnee."

Afropolitan Techniques

When Obinze first saw her e-mail, he was sitting in the back of his Range Rover in still Lagos traffic, his jacket slung over the front seat, a rusty-haired child beggar glued outside his window, a hawker pressing colorful CDs against the other window, the radio turned on low to the Pidgin English news on Wazobia FM, and the gray and the gray gloom of imminent rain all around. He stared at his BlackBerry, his body suddenly rigid... (Adichie 2013: 19).

In volumes such as Makokha and Wawrzinek's *Negotiating Afropolitanism*, the experience of this hip, trans African life is a lived one, embodied in people, and evident in practices. The rhetoric is no less important, nor is the desire for self-representation that our social media in particular offers so well now.

Its politics is also multivalent. Some, like the tweeters and bloggers of VoteKast.com (Ghana), or GhanaDecides (an NGO-backed election-accountability project in 2012) advocate technology as an instrument in leveling the representational playing field of electoral politics. Governmental reform is key, but also avoidance: Many artists are silent, perhaps availing themselves a reprieve: "…the withering or delegitimation of the African state has given credence and authority both to the idea of a global Africa and its particular localities" (Gikandi 2011:10).

To be sure a "give back" ethos persists. South Africa's Kaya FM managing director Greg Maloka states, yes, his radio station is courting such refined, upper-class black Jo'burgers labeled Afropolitan: "[A] mature, sophisticated, socially-conscious individual rooted in his or her heritage and a progressive thought leader" (Wright 2013).

Adichie may not be Afropolitan, but *Americanah*'s characters are: Sitting in a trans African braid shop in Trenton, one emails Nigeria; Another sitting in Lagos, receiving said emails from the U.S. via mobile phones. Interlocutors pass news serendipitously during visits for holidays, or business, or death. Children in Lagos watch SpongeBob on the Nickelodeon channel.

The Ghanaian-born, New York-based hip hop musician, Blitz the Ambassador, has fully embraced the Afropolitan mantel, touring alongside the "Afropean" group Les Nubians, and titling his 2014 album "Afropolitan Dreams."

> It's a new definition of who we are. I feel like anybody has the right, at any point in time to say this who I am, what I am, and own it. I feel like we've gotten to the point as young Africans, even some old Africans, who are thinking a lot more diaspora, rather than just what can I do in my little corner … Our struggles are the same, our joys are the same, no matter where you find us, so that to me is the important part of what it means to be an Afropolitan. But at the end of the day, taking it all back home [to Africa], because that's where it begins and where it ends (Blitz the Ambassador, 2013).[70]

For other practitioners, the geography is multivalent. In a personal interview, Ashong explains: "It's not just like the Afropolitans are the ones who are overseas. There are a bunch of Afropolitans back home in Ghana. There are a bunch of them born and bred in their home country, [who] periodically go outside. A bunch of people fall into Afropolitan quick who have never been to Africa, and are not from African parents. It really is an identification" (Ashong 2013). In particular, Ashong points to a Lebanese organizer whose family has lived in Ghana for several decades. The student was a key co-organizer of technology meet-ups at Ashong's Stanford alma mater, and is currently (2013/2014) serving as president of its African Student Association.

Yet transit has been so instrumental. Ghanaian Hiplife founder Reggie Rockstone was a product of diaspora flows, trying his hand at rap in London and the U.S. without success. It was his return to Ghana in the late 1990s and deliberate use of Ashanti/Twi in his rhymes that kicked off the current hybrid-rap, cross-genre fusions that characterize metropolitan music in Ghana and Nigeria (Osumare 2012; Shipley 2013).

While these contemporary Black Atlantic movements remix and digitize what Edwards calls *décalage* — the asynchronous and disjunctive media culture of Africa's historic diasporic consciousness — articulators of the Afropolitan aesthetic are less sure about the racial essentialization embedded in earlier diasporic identities.

Like Mbembe, Ashong states Pan Africanism and Afropolitanism are not mutually exclusive. But its "multiplicities" speak more to contemporary African life than the social formations of the 20th century. He speaks of an ethnically Arab music promoter who grew up in the Accra and speaks fluent Ga and Twi:

It would be so comfortable for some people I know to be like, 'We're Afropolitan, only Black folks are invited.' And as soon as you say that to some Dominican kid, he's going to be like, 'What are you talking about?' As soon as you say that about a White Zimbabwean, he's going to be like, 'What are you talking about?' As soon as you say that to [my Arab friend], he's

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70 Blitz the Ambassador, 2013, interview, AfrofusionTV, Retrieved http://afrofusionlounge.wordpress.com/2013/05/07/blitz-the-ambassadors-afropolitan-dreams-block-party/

going to be like, what are you talking about, and you're going to sound ridiculous. Because race is only one factor in the formation of an identity… I guarantee you're going to find Ghanaians who are going to relate more to somebody who doesn't look anything like them who happens to have grown up in Accra, or in Lagos, or in Harare, than they are going to relate to somebody who grew up in the heart of Flatbush, who does not know anything about their life language, culture or perspective (Ashong 2013).

Broader Networks

Networks matter. Consider the various Afropolitans discussed in this piece: a musician based in New York who tours Europe regularly; the multi-sited author, Harvard educated, making one of her homes in South Asia; broadcasters and media personalities shaping audiences from Johannesburg or Miami (Ashong). Consider the Web developers based in Tema, their weekend projects are get-out-the vote campaigns in Accra, and business contracts in Benin. Consider the cosmopolitanism of hiplife stars culled from throughout Ghana, even the United States, sporting shorts made by Dutch clothier Vlisco, styles cribbed from African fabrics. Reggie Rockstone dubs his newest Accra club "Django," in reference to the 2012 Jamie Foxx film about a vengeful ex-slave in the American South. Or elsewhere, the Y FM (Ghana) DJ who produces the midday "Afropolitan mix," a collection of pop and R&B songs from Cote D'Ivoire, Nigeria, South Africa, Kenya, and Ghana. When I interviewed him in 2012, he stated he was totally unfamiliar with Ashong or Selasi or Mbembe. In a 2013, trip to Accra, I interviewed more than 20 young globetrotting Ghanaians about their experiences as returnees or transnationals traveling for work and leisure. All but a few hadn't heard the term. Some embraced the definition put forward above. Others were deeply skeptical, uncertain that this latest nomenclature was a re-packaging of black elitism — the cohorts of the privileged described in South African media as "black diamonds."

Most dramatically, a group of returnees in Accra calls itself Ahaspora, a neologism that combines the Twi word for "here" and diaspora. Their main organizing tools are Facebook and a listserv. Many Accra diaspora returnees that I interviewed participated in the group: Most expressed their annoyance with the seemingly attempt to create a distinct identity for those who have returned from those who have stayed.

Yet, how do we characterize a Ghanaian truck driver that I interviewed living in San Francisco: Ahmed formerly made a living selling transporting and fixing motorcycles throughout Togo, Benin, Nigeria and Cameroon. Before he moved his children to the U.S., now teenagers, he called to them nearly every night via mobile phone and calling cards to where they lived in Nima, Accra for 10 years. If we can now use the network metaphor to map social relations, we must ask what relationships define the networks: How are the "nodes" arranged, not only geographically, but hierarchically, or functionally? How does "flow" define these relationships: Thus, what is meant by a global network, especially one such as an African mediascape to an Afropolitan or a community of them, where hierarchies persist.

Afropolitanism may not be a comfortable label for some, may subsume more strident internationalist identities, but in its multiplicities it speaks best to many experiences in contemporary African life. It is a culture of the "cloud" and the soil: Linked by new media peripherals (Email, mobile phones, apps) and grounded in the local (electricity, cities, the Internet, blogs, connectivity, night clubs, poetry readings, refugee centers, markets, public markets). It is a series of global flows however unevenly experienced.

The Afropolitan discourse chiefly revolves around and is embedded a discourse of technology and mediation, self-described, or as so labeled via this work and others, intimately: It is also Web 2.0, the Social Web — a much more robust and reflexive apparatus of its community, faster than letters and cassettes, more interactive than radio, more demonstrative than Hollywood. Key is it's self-representational power afforded by information technology (Chun 2004). It finds rich expression on the blogs of Teju Cole, an award-winning author of mixed Nigerian-European heritage, or in art-house films such as "Restless City,"[71] by Nigerian-born Andrew Dosunmu — a film about Senegalese migrants and the criminal underworld in New York.

In many ways the celebratory Afropolitan spirit is an attempt to free African creative culture of the baggage of history, including colonialism, racism, and Afropessimism, in favor of an evidentiary worldliness: The sometimes glittery, sometimes tragic, entangled and oppositional relationship to the West and its technologies (Burrell 2011). It is also grounded and completely contemporary. However, not all networks are created equal. Afropolitanism may be productive as a global unifier like *Latinidad* (Caminero-Santangelo 2007) or as indulgent a label as *Desi*, used to link young South Asians abroad (Maira 2002). This new project, still nascent in its popular penetration and exercise, may attempt to reform geography, but it should also learn from other misappropriated art movements such as post-Blackness. Exemplified by the morally ambivalent art of visual provocateurs like Kara Walker, and writers such as Touré who embrace hybridity and anti-essentialism, the post-black art movement attempted to refresh public thinking about African American identity in the generation after the Civil Rights movements of the 1960s (Womack 2010). Those gestures would be shouted out and muted as reactionism in the Black community sought to reincorporate this avant-garde identity, especially as the American public move towards the rhetoric of "colorblindness," ultimately culminating with the election of (some might say Afropolitan) Barack Obama as president (Touré 2011).

Towards an Afropolitan Mediascape

Discourse that seeks to shape the social imaginary around the nation-state of Ghana extends far beyond borders. This transnational space is constructed by digital actors in diaspora, the digital majority in the homeland, and it's digital elites, innovating via the most sophisticated levels of cyberculture using information technology. These are just a few elements in a growing social sphere that seeks to make durable and also to augment the life-worlds of Africans in this contemporary age of globalization. The Afropolitan mediascape is a product of ICT, though African media publics and transnational discourse existed prior to the advent of digital media. As a continuum of experience, however, Afropolitan circuits largely go global due the emergence of user-generated media and digital social networks via sites such as Twitter, Facebook, via blogs and other aspects of online culture including YouTube and Internet radio. While early digital diaspora communities found their niche by circulating via email and other discrete forms of information and delivery such as video and audio cassettes, the digitization of these interactions have fundamentally reduced a reliance on the structure of industrial society, infrastructure such as shipping and telephony. It has created broadcasters out of small time pundits, allowed church organizations to commodify their sermons and go global.

That the Afropolitan mediascape is not confined to one specific city or ethnicity or nationality, is attested to in the collective politics of African transnationals of previous

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71 Dosunmu, A. (2012). "Restless city." United States: Screen Media Films.

R.A. ROYSTON   RE-ASSEMBLING GHANA

generations and in the life-worlds of communities in diaspora. Seldom are African immigrant communities islands unto themselves, reflecting at the microlevel, the broad politics of organizations such as the African Union and the independence movement, which recognized a greater collectivity in the Black diaspora. That family gatherings, public festivals, political organizing, entrepreneurship and literature, music and online content elide these once colonial distinctions, speaks to the greater narrative of geo-political collectivity.

Ghanaian tech innovators move in this Afropolitan mediascape. In the attempt to reassemble identity through digital diaspora, against asymmetrical networks, their project is a work of representation, an attempt to fashion a new global imaginary through the practices of material innovation. Digital diasporans and African hackers are social actors who have seized upon the zeitgeist of the Information Society to produce contemporary social and political identities that resist the narratives of technological abjection that plague African representations at-large. Thus Afropolitanism works as a counterpublic (Fraser 1992; Lacewell-Perry 2004) that collectivizes the strivings and new globality of black subjects — against Europe's cosmopolitanism that finds easy instrumentality in the Network Society. These tools of global connection and place making, work against an enduring asymmetry between the core and the periphery. The Afropolitan mediascape is but one in a greater diversity of contemporary information networks, but one that marks, with technology, Africa in the world.

RAR May 2014

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