

Making as imaginative crossroads: Ghanaian makers and the geopolitics of technological progress

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Abstract

This paper is about the politics of technological progress as it is being played out among a loose network of Ghanaian makers. It unpacks how the practice of ‘making’ unfolds as a site for positioning the self and the nation within a global imaginary of techno futures. The paper argues, first, that ‘making’ in Ghana is emblematic of a crossroads of imaginative possibilities for technological design and production, and second, that this marks a distinct turn in the politics of technological progress, particularly when situated against ongoing economic-political negotiations between the Global south, the West, and China.

KEYWORDS

making, geopolitics, Africa, silicon valley, China

1 | BACKGROUND

Making, or specifically, the maker culture in contemporary discourse generally refers to a combination of DIY and hacker cultures. Proponents of this view of making, particularly Make Media and the collective of Maker Faire organizers around the world, see digital technologies as ‘revolutionizing’ making and leading to greater democratization of innovation and subsequently the third and fourth industrial revolutions (Anderson, 2012; Marsh, 2012). Digital fabrication together with entrepreneurship has fueled enthusiasm for an imagined future in which technological progressivism is taken as a given and a net good for humanity (Tsing, 2015). Within Human-Computer-Interaction (HCI), Participatory Design (PD), and Science & Technology Studies (STS), this utopian ideal and democratizing potential promoted within maker culture has been critiqued as exclusionary and encouraging a shift towards DIY consumption (Bardzell, Bardzell, Lin, Lindtner, & Toombs, 2017; Carelli, Bianchini, & Arquilla, 2014; Lindtner, Bardzell, & Bardzell, 2016).

Across public discourses and academic literature on making, much of the focus is on hobbyist makers, who arguably may make up the majority of the ranks within various maker communities. Often, these accounts are drawn from Euro American cultures, in which long standing access to electronic and digital tools helped towards DIY experimentation in IoT, body augmenting, etc. Other accounts from non-western regions have examined the role of the maker culture in individual and national techno-imaginaries, often in connection with the role of the maker-entrepreneur as a privileged and valorized figure in various parts of Africa, China, Indonesia, etc., areas where access to digital technologies are less pervasive but on the rise (Avle, Li, & Lindtner, 2018; Avle & Lindtner, 2016; Coban, 2018; Lin Kaiying, Lindtner, & Wuschitz, 2019; Lindtner, 2020; Lindtner & Avle, 2017; Lindtner & Lin, 2017). Maker-entrepreneurs are distinguishable from hobbyist makers through the entrepreneurial and business activities associated with their making practices. The hobbyists in these studies largely focused

their making practices on their own, typically home, uses. The maker-entrepreneurs turned those things into business transactions, either on an ad hoc basis, for instance building a replica for another person for a fee, or selling services and products born out of making on a regular basis. Both categories often shared their designs and tinkering in communities of practice across various localities.

This paper builds on these prior works that situate making and the maker-entrepreneur within sites that may be considered on the periphery of global technological production, as well as their various articulations of identity, labor, and nation building. Specifically, this paper unpacks how the practice of ‘making’ in Ghana unfolds as a site for positioning the self and the nation within a global imaginary of techno futures. I argue, first, that making in Ghana is emblematic of a crossroads of imaginative possibilities for technological design and production, and second, that this marks a distinct turn in the politics of technological progress, particularly when situated against ongoing economic negotiations between the global south, the west, and China.

2 | METHODS

This paper draws from a qualitative study of making and tech entrepreneurial culture in Ghana conducted between 2015–2019. The goal of this larger study is to understand emerging and shifting ideas about digital technology such as IoT, examine cultures of innovation, and make sense of shifting notions of technology, labor, and work in the global south. The findings discussed below are drawn from a subset of data centered around a group of hobbyist makers and maker-entrepreneurs based in Accra and Kumasi in Ghana. They come from in-depth interviews with makers, participation in and analysis of a public maker group chat on WhatsApp, and observations at various sites and events in the two cities. These events include maker-faires and exhibits, technology and culture events, mini conferences, etc. Sites include hardware incubators, tech hubs, startups, and public places where makers gathered socially. Given the broader study’s focus on digital technology cultures and the timing of the study, IoT and digital fabrication were a key area in which makers were experimenting. Below, I elaborate on how imaginaries of what making means for the Ghanaian maker-entrepreneurs in this study translated into imaginative possibilities of futurity underscored by present day geopolitics.

3 | MODELS OF INSPIRATION AND INSTRUMENTALITY

Making and digital fabrication for the contemporary Ghanaian maker (hobbyist and entrepreneur alike) appeared to be a process born of two models of technological production. I identify these two models as the Western/Silicon Valley model and the Chinese/Shenzhen model. Silicon Valley has long been considered a template for innovation and regional advantage in Ghana and elsewhere in Africa as well as Asia and Europe (Avle, Lindtner, & Williams, 2017; Saxenian, 2006). Companies like Apple and Facebook have come to represent modes of production that center around multinational consumer and user bases, closed and hidden research and development (R&D), and heavy investments into intellectual property (IP) protection. Many of the makers interviewed in Ghana often mentioned Silicon Valley founders like Elon Musk and Steve Jobs as inspired figures whose ways of thinking and ‘doing tech’ were innovative and future facing. Moreover, many of the open source schematics they downloaded were from Silicon Valley practice sites like GitHub.

Yet, even as Silicon Valley remained inspirational and, in some ways, aspirational, none of those interviewed, with the exception of startup founders who were also building software, saw it as a place to get their making dreams material. That is, while they might take advantage of the open source culture that is interwoven with proprietary techno empires of present-day Silicon Valley, all the makers looked towards southern China to access the materials and tools needed to bring IoT designs and hacks to life, if they could not find local materials. It was in China that they saw practical examples of open collaboration and a supply chain that was oriented at global south markets.

The transformation of Shenzhen, one of the first Special Economic Zones from China’s opening up period (O’Donnell, Wong, & Bach, 2017), from a city of *shanzhai* or fake/copycat production to the ‘the maker’s paradise’ and ‘the Silicon Valley of hardware’ has been documented elsewhere (Lindtner, Greenspan, & Li, 2015; Yang, 2014, 2015). Stories of making one’s own iPhone in *Huaqiangbei* market in a day and videos by MIT Tech Review documenting similar maker escapades continue to circulate online, drawing makers the world over towards Shenzhen.¹ A key aspect of this remake of Shenzhen’s image, lies not just in Chinese makers and government seeking to change “Made in China” to “Designed in China”, but also with western makers turning towards Shenzhen to redeem their visions of technological promise after the financial crisis of 2008/9 showed them to be vulnerable and precarious (Avle, Lin, Hardy, & Lindtner, 2020; Lindtner, 2020).

For Ghanaian maker-entrepreneurs who until recently had to make do with whatever they could get locally, access to affordable electronic components from Shenzhen meant that certain aspects of making, particularly those that made IoT possible, was suddenly within reach. China, it appeared, through accessible marketplaces and eager traders on Ali Express and WeChat, now was the place to look for ways to bring technological dreams to reality, and perhaps even achieve the kind of scale that Silicon Valley promised. Silicon Valley remained the imaginary for a particular kind of impact and scale – an inspiration born of long-standing western dominance in the global tech market. However, Shenzhen, and in some ways Silicon Valley's own promotion of Shenzhen's maker ecosystem, turned it into a competing imaginary aimed at delivering specific and material techno-futures.

4 | MAKING AFRO TECHNO-FUTURES

The desire to craft a particular kind of techno-future within the community of maker-entrepreneurs in this study often revolved around what a Ghanaian and African way of “doing tech” might entail. Between 2015 and 2019 when Shenzhen slowly became a visible and accessible site for the sourcing of electronic components, conversations moved towards how Ghanaian maker-entrepreneurs might leverage knowledge and lessons from both China and the west. “The Chinese way” offered models of open collaboration that looked more accessible than the western version that touted open source ideas but was in practice a closed system of tightly protected networks. Some of the Ghanaian maker-entrepreneurs, in prior years, had participated in a group called Maker Faire Africa which, despite its name, was autonomous from maker-faires associated with Make Media in the US. The Maker Faire Africa's manifesto included statements on “proving African ingenuity, making things that Africa needs, taking responsibility to act, sharing and helping one another, and crucially “waiting for no one” and remaking Africa “with our own hands”.²

To that end, most of the maker-entrepreneurs worked towards building IoT and other forms of digital fabrication that could be useable and helpful in Ghana in spite of limited infrastructure. For example, as Covid-19 lockdowns went into effect, a number of makers came up with solutions to help people who live in close quarters and have limited access to running water practice social distancing and improved hygiene. One design used motion sensors to build a touch free water tap whereas another designed a foot operated pump. Both used local materials even though one required electric to work and the other did not. The motion

sensor design borrowed from open access designs from western maker communities online and was built with components sourced from China. The other was manual and together, could be used by a range of people in a variety of contexts. In both cases, the makers were attuned to the fact that running water was a limited resource that necessitated more hands on one tap than is common elsewhere.

By being creative and making do, maker-entrepreneurs in this community see their work as turning inspiration into reality towards a techno future that serves the local and the regional. This future is both self-made and self-directed, just as it is collective. IoT in particular, was a way to combine the future oriented digital technologies of cloud computing, AI, and machine learning, with more bucolic hardware tinkering that many of the maker-entrepreneurs were familiar with. IoT signaled a future of possibilities for the self (i.e., becoming more technically skilled) and the country (i.e., building things that benefit Ghanaians) and the region (Africa) at large. The president of the Ghana IoT Network Hub, in his public appearances and in interviews for this study, used IoTs as both a symbolic and practical solution to everyday problems. For him, “IoT is the future of technology... With IoT and AI, we can solve problems facing our continent, build innovative solutions to address sustainable development goals, and create more job opportunities for the African continent.” The IoT Network tags itself as ‘the community of the future’ and in their recruitment efforts, often underscore that one need not already know how to develop IoT but as long as one is willing to learn. The head of the network often used his own lack of formal training to highlight the ‘democratizing’ possibility that gets ascribed to digital technologies.

An easy critique might focus on how the future is articulated as technological and necessarily progressive. However, this very idea was often debated by the makers, although the majority assert that the net good of technological change far outweighs the negative. The project of future making as articulated by the makers and IoT developers, included an almost moral agency and imperative to be active and to ‘show up’ by leveraging the two main techno ideologies typified by the United States/Silicon Valley and China/Shenzhen. ‘Showing up’ included the deployment of (an) IoT imaginary that was fiercely directed at Ghanaian and African lives, challenges, etc., even if partly fueled and enabled by Chinese made technologies and Western techno mythologies. An example of the “global south” for whom, as Comaroff and Comaroff say “the north likes to spin theories about” (Comaroff & Comaroff, 2013), Ghana's IoT makers rejected the notion that they are beholden to one or the other and reframed both Chinese and western technology as convenient tools with which

they build their own visions of techno-futures, one that were often inclusionary and hyper aware of the lives of the extreme poor.

Much of the techno-futures evoked within this space, were what I view as equal parts afro-futurism (Winchester, 2018) and negritude (Senghor, 1966). I evoke negritude for its emphasis on Blackness and Africanness, its rejection of colonialist tendencies (as seen for instance by those who wish to be like Americans and Europeans), and its promotion of African consciousness. IoT development and making manifested as spaces in which to mobilize resources that are positioned as oppositional in the broader political discourse, and turn them towards pragmatic solutionism and future making. In some ways, by combining whatever benefits they saw from two models of technological production in Silicon Valley and Shenzhen, Ghanaian maker-entrepreneurs reflect a long standing non-allied attitude exemplified by a famous (1960) quote from the country's first president, Dr. Kwame Nkrumah, on “neither facing east nor west, but facing forward”. By taking inspiration from Silicon Valley and seeing Shenzhen as instrumental does not suggest that Ghanaian maker-entrepreneurs ascribe more value to one over the other. In fact, what is striking about the ways that they articulated attitudes about Chinese and Western modes of technological production was that they offered served as an entry point into discussions about how to make the future of digital fabrication fit the needs of not just Ghana's present but also its future.

5 | CONCLUSION: GEOPOLITICS, SUPPLY CHAINS, AND TECHNO-FUTURES

As a postcolonial state on a continent often viewed by the rest of the world as a technological backwater or periphery, discussions about economic development within Ghana, often position the country within a regional and global frame. Current geopolitics that center the United States and China as the two powers to contend with on the global stage do not take place outside of everyday interactions of particular communities, and critiques of both western and Chinese models of governance happen alongside selective borrowing of ideas and practices of making technologies. While the future, to these makers, is technological and progressive, it is not necessarily pre-ordained to look like the east (Shenzhen) or the west (Silicon Valley). Rather, both work as tools for the crafting of a different Ghana and Africa, one built by the hands of its makers and maker-entrepreneurs.

ENDNOTES

¹ See for instance <https://www.youtube.com/watch?v=SGJ5cZnoody>

² See <http://makerfaireafrica.com/maker-manifesto/>

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