

Kenya: Techpreneur, Transnational Node, Kibera

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Abstract

Four STS (science, technology and society) collectives (from Kenya, Turkey, Japan, and Ecuador) presented their archives and accounts of their collective work at two meetings of the Society for the Social Study of Science (4S) in Sydney 2018, and New Orleans 2019. These presentations are not only very interesting in themselves, but are housed on a digital platform (Platform for Experimental Collaborative Ethnography or PECE) that poses the question—and attempts to build a solution—of how ethnographic materials can be digitalized and made available for productive further activity. As one possible response, four *engagements* texts are published on STS-Infrastructures: “KENYA: Techpreneur, Transnational Node, Kibera” (2023a), “TURKEY: Inside and Outside the University” (2023b), “‘Japan’/Japan On Line: NatureCulture” (2023c), and “ECUADOR: Thirdspaces amidst Social Conflict” (2023d), along with a consolidated list of references entitled: “Bibliography for Varieties of STS” (2023e). All of these are extensions of the overarching text published in the *Engagements* genre of the *ESTS* journal entitled: “Varieties of STS: Luminosities, Creative Commons, and Open Curation” (2023f). This *engagement* focuses on Kenya.

Keywords

Kenya; creative commons; open curation; PECE platform; STS across borders; space; place

Introduction

Two readings are juxtaposed: the rise of the Techpreneur (in Kenya), and the longer evolution of knowledge ecologies, with PECE as a new player inside–outside the university in the body of the civic (as opposed to expert) community (in Turkey).

The Contradictory Figure of the Techpreneur

Despite this risk, scholars should not simply cynically disregard the figure of the entrepreneur. With the growing informality of world economies and increasing importance of entrepreneurs of all kinds in many different sectors, scholars will need to think well about this contradictory figure. (Okune and Mutuku 2023)

Kenya provides two of the most recent technologies of digital transformation: [M-Pesa](#) and [Ushahidi](#), the one allowing a leapfrogging, past the slow wiring of telephony, into the digital worlds of credit and communicative mobility, the other an open source platform for mapping troubles and supplying emergency

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To cite this article: “Kenya: Techpreneur, Transnational Node, Kibera.” 2023. *Engaging Science, Technology, and Society*. STS Infrastructures (Platform for Experimental Collaborative Ethnography), July 10, 2023. Accessed August 16, 2023. 9(1): 173–182. <https://n2t.net/ark:/81416/p4mg6j>.

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relief. Nearby across the southern border on the Serengeti plains of Tanzania, is Olduvai Gorge, one of the places from which we mark the beginnings of homo sapiens' history, and the spread of our genomic diversity—genomics being one of our newest digital sciences, and one with an important contemporary history via agricultural biotechnology since Kenyan independence (see [Juma 2023](#), discussed in length later in the text).

So, it is wonderful to have an ethnographic report from founding members of [i-Hub](#) in Nairobi, established in 2010–11, a spin-off of Ushahidi, as not just a focal point for the meme of “Rising Africa,” but as a localized place in Nairobi, a long-time space of STS-like beginnings, if not yet of a disciplinary STS formation. i-Hub became an important first “pit stop” for diplomats and international visitors who wanted to see Kenya’s “Silicon Savannah.” The two authors, who style themselves as a White Asian–American woman and a Black Kenyan woman, worked at i-Hub for five years (2010–2015). As former members of i-Hub, they see themselves as positioned both as researchers and as objects of research, a double-vision situatedness, conducive for cultural critique and STS perspectives, both of i-Hub as one of the first of now hundreds of co-work spaces across Africa, and as a start-up in its first phase before being bought by enterprises with sustainability in mind.

The figure of the Techpreneur arose, they suggest, out of the Post-Election Violence (PEV) of 2007–08 in which over a thousand Kenyans lost their lives, resolved temporarily only by a power-sharing agreement, and through which government lost trust in its legitimacy. As with the ordoliberal economic miracle in post-war Germany ([Foucault \[2004\] 2008](#)), the figure of the Techpreneur offered a non-governmental, technical fix, a potential democratic mode of techno-optimism, with all the affordances and diversions of a neoliberal world. The Techpreneur was an “investable” figure “latched onto by state, development aid, and philanthropic sectors,” gaining “circulatory power” through state, international, and non-governmental funding and rhetoric. A start-up culture, dubbed Silicon Savannah, it was hoped, would grow, and lead the way for a continent-wide self-generating entrepreneurial ethos. There was enthusiasm for “Rising Africa.” Built on the rapid spread of mobile phones and laptops, individual and community entrepreneurs could build a new political economy, set apart from slower, government or corporate formations (albeit needing to negotiate and forge new government regulatory and patent sovereignties). M-Pesa and Ushahidi were to lead the way into a digital future, and i-Hub was one of the best branded of a growing number of co-work spaces, fab labs, maker spaces, and start-ups.

Okune and Mutuku run through the shifts in the innovation ecosystem during the first years of i-Hub, before it was acquired first by a venture capital firm in 2017, and then by the Lagos-based Co-Creation Hub ([CcHub](#)) in 2019. Okune and Mutuku show us the changing regulatory landscape as Kenya moved from authoritarian control under Daniel arap Moi to the more open presidencies of the LSE-trained (London School of Economics) Mwai Kibaki (2002–13) and Amherst College trained Uhuru Kenyatta, producing a succession of information technology (ICT) policies, plans and negotiations, including especially the 2004 E-Government Strategy, the 2006 National ICT Policy, which ended the state monopoly on the then fledgling internet service providers (ISPs), and the 2014 ICT Master Plan, which envisioned call centers and back office service

(modeled on India's outsourcing services for multinational companies). But in 2007, with a different imaginary, M-Pesa was launched (owned jointly by the government and [Safaricom](#)) rapidly becoming the largest mobile phone operator in Kenya and expanding into eight other countries. By 2012 it had over 8.5 million users transferring the equivalent of ten percent of GDP over the cash-credit-cash or loan-float M-Pesa system. And in 2008, Ushahidi (Swahili, "testimony," "witness") launched as an open source platform for crowdsourcing or "activist mapping" to allow eye witnesses to email and text message locations of violence onto a Google® map. An imaginary of state-and-subjects was now replaced by one of multitudes of citizens creating a civil society, accountability for government actions, and a new mode of voluntarism and self-help.

Ushahidi gained international fame in 2010 with its use in earthquake rescue operations in Haiti and Chile, and then the humanitarian response to the BP® Deepwater Horizon oil spill. In Kenya in 2013 it helped monitor elections, and in 2014 helped coordinate responses to the Westgate Mall terror attacks. Ory Okolloh is credited with the initial idea for Ushahidi, and was joined by Erik Hersman, Juliana Rotich, and David Kobia. Okolloh seems also to have had a hand in the founding of i-Hub along with Erik Hersman, Judith Owigar, and David Kobia. In 2010, Okolloh stepped down as Executive Director of Ushahidi becoming Google's® Manager of Policy for Africa. Juliana Rotich too has become a well-known information technology leader, with a stint as an MIT Media Lab Fellow.

The initiation in 2010 of i-Hub by Ushahidi co-founders was part of the emergence of several co-working spaces in Nairobi. Okune and Mutuku mention a few of these, including the University of Nairobi's [C4DLab](#) (founded in 2013 in the Computer Science department, functioning as an incubator), the World Bank's "infoDev mlabs" (focused on helping tech hub managers and entrepreneurs), and others such as iLab, and [Nailab](#). Okune and Mutuku give the impression that i-Hub was run by young women, and Ory Okolloh and Judith Owigar were indeed co-founders as noted above, although Owigar's own website says only that "she attended i-Hub's maiden launch and noticed they were only a few ladies in attendance. This prompted her and her friends to co-found [AkiraChix](#) as a way to increase the ratio of women to men in technology." AkiraChix was founded in 2010 by seven women who work in the tech industry. All seven trace their motivation to their observation of the launch of i-Hub having few women present. Owigar is a graduate in computer science from the University of Nairobi, and perhaps (I am speculating) had a hand in the founding of a C4DLab. By 2014, AkiraChix, which began with eight girl students, had three hundred members. The goals are training young girls, mentoring high school girls (with also bi-monthly meet ups, and annual career fair), and networking for women in tech (meet ups, conferences, hackathons). They give credit for important moral support to i-Hub, but also credit funding from [infoDev](#), [Google Rise](#), [Half the Sky](#), and [SIDA](#) (the Swedish International Development Agency).

Okune and Mutuku argue that Techpreneurs are caught in a web of foreign funders, and must report to foreign venture capitalists, philanthropists, and international aid organizations. Techpreneurs are thus not only caught in contradictory double-binds of who they work for, they are entangled, complicit, in the world.

The world is, after all, financially and otherwise entangled and this entanglement should be part of any STS accounting of institutionalization.

Since the time when Okune and Mutuku worked at i-Hub, both i-Hub and the tech ecology have changed. In tech speak, the ecology has updated. I-Hub was funded originally as a spin-off of Ushahidi, with support from [Omidyar Networks](#) (a US based “philanthropic investment firm for social entrepreneurship” initiated by [eBay](#)® founder Pierre Omidyar) and [Hivos](#) (a Dutch NGO providing support to civil society). The founding CEO of i-Hub, Erik Hersman, left in 2013. I-Hub was surviving but not quite breaking even, and Hersman recruited an interim CEO, Kamal Bhattacharya (from [IBM](#)® Research-Africa), to help it become sustainable, in part by scaling up. Bhattacharya argued that the ecosystem was changing with a proliferation of co-working spaces, and also a changing demand for kinds of spaces, and thus there was a need to move to a commercial model to keep the enterprise afloat or even growing. Initially Erik Hersman recruited local investors to help with these goals, but eventually turned to American venture capitalist Miguel Granier (who also invests in Hersman’s [BRCK](#), a manufacturer of a modum-cum-router device to solve the last mile connectivity problems in East Africa where in 2019 an estimated ninety percent of schools and thirty percent of hospitals were off-grid).¹ Granier acquired i-Hub, and tried several business models to help stabilize the enterprise or get it to a level where it could be acquired by other investors. Discussions with CcHub in Lagos began in 2018 and CcHub became i-Hub’s owner, but leaving its brand and local management in place.

A whole new Africa-wide vista opened up: CcHub had always been a commercial enterprise charging fees for use, but with the expansion to Nairobi, and a year later opening a [Design Lab](#) in Kigali, Rwanda, there was the beginnings of a platform not just for start-ups, but for contributions to digital epidemiology and public health, improving learning outcomes in STEM education, and participatory governance. Erik Hersman summarizes one way of viewing technological change since the 1990s: “The 1990s brought us the rebels in the form of scrappy upstart mobile operators and ISPs. They were the real cowboys and renegades then. Inspiring leaders, courageously trying everything from pre-paid credit models in Africa, to thinking of mobile credit as cash, to digging the first fiber cables into the hard part of the continent. Regrettably, these cowboys have handed the reins over to our modern-day robber barons.” ([Hersman n.d.](#)). The next step he thought in 2019 was to roll out public WIFI hotspots, layered with a free consumer model, so that anyone who could get that signal could connect and take advantage of the whole internet. Revenue would be generated by businesses growing with the volume of users, which in turn could support the free access to consumers, which, in a virtuous circle, would create expanded and new markets from which the businesses could derive revenue. He called the software, he wanted to layer on his BRCK modum hardware, “Moja”

¹BRCK “allows users to leverage the nearly ubiquitous mobile broadband and turn it into a connection designed for productivity, rather than solely consumption. It is designed to provide redundancy where power and internet infrastructure are poor, automatically switching to inbuilt batteries if the power goes down and to its own 3G connectivity when any SIM you’ve inserted can’t get a signal” ([Jackson 2014](#))

(Swahili, “one”) short for “pamoja” (“together”). He said in 2019 already he had 850 SupaBRCKs run Moja on public transport vehicles (buses and matatus) in Kenya and Rwanda.

One can agree with Okune and Mutuku that all this can be described as cooption by capitalism, and that expatriates (they prefer the term “white immigrants” blurring, if not confusing, the categories of citizen and investor) often are beneficiaries over local Africans; and yet alternative Techpreneurs are not just—as they finally admit—to be cynically dismissed as victims of racialized capitalism.² I’ve tried to signal, by foregrounding women techpreneurs in this story—Ory Okolloh, Juliana Rotich, Judith Owigar, and the women of AkiraChix—that there are alternative stories, paths, and social innovations. For every dismissal of the dire state of local universities, there is a Judith Owigar. And yet, as they argue, perhaps their main point, the privatization of public health, education, and infrastructure for development is, of course, concerning when it substitutes for the democratic functions of governance.

One wishes Okune and Mutuku had told us about the most important projects that i-Hub has helped incubate, especially the community building ones. Erik Hersman talks about one: the developers of the Kibo motorcycle (short for kiboko, Swahili “hippo”) used the iHub lab to do some of the initial work (he does not say what, and it does still have a Japanese engine), for a durable motorcycle that can handle hills and dirt roads, with weight loading 250 kilos and fuel economy of 42 km/liter, to be used for local transport of goods and people.

The Longer Evolution of Tech Ecologies and Research Data Sharing

We often get caught up in localities and presentism, without having the double consciousness of longer-term evolution of tech ecologies through the tumult of decolonization, independence, political contestation, and changing paradigms of development and innovation for the social good of communities rather than for profit (the market being but one technology in a larger social environment). I am inspired by Okune and Mutuku’s work to explore a bit further spatially and temporally. Kenya provides other STS sparks, among which I will mention only three, one on the mega-technological scale, a second other on the dynamic human life course or generational scale, and third returning with Angela Okune to newer work on the PECE platform but in Kibera building community rather than academic knowledge, that is making data with and for residents of Kenya’s largest slum.

² They catalogue: white expatriates get over 90 percent of funding for East African startups; the government tends to prefer non-Kenyans for “globally competitive” contracts such as for the Konza “smart city”; “local innovation” is often a euphemism for a passive workforce of coders and back office workers; the winner of a talent award was a camera system to capture speeding traffic and send tickets (surveillance and taxation); the misuse of “capacity building” and “upgrading skills” to pay foreigners excessive consulting and development project fees.

Mega-Tech

While much STS work has turned to meso and micro scales, it is important for STS to keep an eye on mega projects such as hydroelectric and irrigation projects, mining, and nuclear power. A new one is the experimental large-scale geothermal drilling on the volcanic slopes of Mt. Kenya to provide not only a clean source of energy but also a way of returning waste emissions to rock form (proof of concept pioneered in Iceland) ([Rahier forthcoming](#)). I mention this spark only in passing here primarily as a reminder that such projects—like also science cities mentioned below, and the many massive hydro-electric irrigation schemes that for a time were “temples of modernity” and are still being built although facing considerable skepticism about the displacements they cause—have been and should continue to be, important parts of the STS studio. (See [Pype, Adune, and Fischer forthcoming](#) for examples of technology in the post-global cities of Africa).

Life-Course or Generation Scale

I make a nomination for remembering in our genealogies the Kenyan STS scholar, Calestous Juma, whose childhood saw the destruction of a fishing ecology along the coasts of Lake Victoria, who was educated at Sussex University, amidst other future post-colonial leaders, in the “History and Social Study of Science Program” at SPRU (Science Policy Research Institute) working first on renewable energy, and then his PhD book, “The Gene Hunters: Biotechnology and the Scramble for Seeds,” the first of some twenty books. One of these books was on patent reform for industrial policy to avoid the entrapments of international patent policy that prevented third-world development, based in part on his work for the Kenyan president on parliamentary legislation for industrial patent reform. He worked with Kenya’s first woman to gain a PhD and future Nobel Laureate, Wangari Maathai, at the Environment Liaison Centre in Nairobi (founding and editing its journal [Ecoforum](#)). He founded the Africa Center for Technology in Nairobi which grew into a key node in international science diplomacy. Among important STS-aligned colleagues in Nairobi was entomologist Thomas Odhiambo, the founder of the [African Academy of Sciences](#), and the Research and Development Forums for Science-Led Development (whom I heard deliver a series of inspiring talks, including such paradoxes as using simple wooden ladders to go inside a nuclear research reactor in the Congo) at the [American Association for the Advancement of Science](#)). Juma then became the first permanent Executive Secretary of the Convention on Biological Diversity. Eventually he moved to the Harvard Kennedy School’s Belfer Center, where he directed the Science, Technology and Globalization Project and the Agricultural Innovation in Africa Project. He also for two years became the Honorary Chancellor of the University of Guyana, a position he took seriously as another chance to help with education reform in a situation of polarized political economy, ethnic-racial rivalry, and post-colonial double-binds.

Juma’s career is an engaged and hospitable example of what I like to call “life histories as social hieroglyphs,” a methodological tool of transection through time and generations, revealing historical contexts and shifts in prevailing (trending) understandings. In his case, it is also an account of resistances to and successes in STS thinking in institutional, government, NGO and academic settings. Success depends on how one evaluates long-term social developments that are rarely linear or finished. His autobiography provides a partial mapping of, or preliminary access to, figures who have played key roles in how the fields

of environmental and science diplomacy have operated over the past-half century ([Juma 2023](#)). It paints vivid scenarios of what it felt like in the first flush of enthusiasms of earlier development paradigms and how they came undone or transformed. I think of his account of his offices in downtown Nairobi amidst the vital debates in government, in politics outside, and in negotiation with NGOs and international offices, all within a few blocks of one another. I think of wry anecdotes of the British going to Yemen to steal coffee seeds, when they could have cultivated local coffee plants; of what it was like to be at the center of international scientific activity and renewable energy studies, all in Nairobi; of how he experienced ethnicity as a young teacher being mocked in a language he didn't understand until he counter attacked by addressing them in Luhya (a Bantu language) and Luo (a Nilotic one) which they didn't understand; of how Africa's first ISP was in the physics department at the University of Zambia but was thrown off campus by the university senate which decided it was a private enterprise, and then when it became Zamnet, Zambia's largest internet provider, the university attempted to sue Zamnet for absconding with University property; or the astonishing factoid that Somaliland was the world's first country to use iris recognition for voter registration.

Juma's autobiography could provide reference points for renewed investigations of STS movements within the discourses of sustainable development, the geopolitics of genetics and genomics, and renewable energy in Kenya and in Africa. I have vivid memories during the heated debates between the European Union and the United States over whether genetically-engineered crops should be allowed into the feed and food supply chains, and Juma laughing that the European import bans on genetically-engineered crops from East Africa and Thailand were fundamentally trade wars to stall for time until European producers could catch-up to the Americans. Whatever the arguments of that sort—patent regime changes in India at the time of admission to the WTO was another heated controversy—Juma knew the deep diplomatic and geopolitical background, as well as the individual players. Among my most exciting moments with Juma at Harvard and MIT (especially after hours at MIT's Faculty Bar in the Stata Center) were invitations to African leaders in science and technology policies to gather in Boston for discussion, but especially for informal laughter, reminiscing and recommitments to what after all are life-long endeavors that survive through intricate human politics (also human-non-or-more-than-human ones).

What if oral historians and ethnographic interviewers had seized these moments to tap into the collective life histories and practical STS experiences of these two or three generations of post-independence, decolonization, and new digital facilitators, with their deep wells of experience and personal knowledge of networks and conflicts—a new history of African science and technology might be revealed quite different from the scattered histories and ethnographies produced to date.

STS needs to hear more voices and situated experiences like those of Calestous Juma and Thomas Odhiambo, and fuller accounts by those in the trenches today such as Ory Okolloh, Juliana Rotich, and Judith Owigar. Thanks to Okune and Mutuku for getting us restarted. The contradictory figure of the Techpreneur sits in the double-bind crosshairs of (sometimes multiple) conflicting imperatives, what I have called “ethical plateaus” of temporary points of equilibrium of decision making where technologies conflict. The feminist-

seeking gaze and the double-gaze of STS researcher-researched (insider-outsider), provide situated grounds for cultural critique and expanded understandings of how science, technology and society entangle.

Community Scale

There is more to be said about the struggles over the digital transformation in Kenya, and here again Okune and colleagues provide not only an important venue or window, but a different understanding of how the PECE platform could be helpful and hospitable. The Research Data Share group and platform is an “instance” or tailored use of the PECE. Okune ([2021](#), [Okune and Mutuku 2023](#)), as mentioned above, describes how she and other voluntary participants created a Research Data Share working group in 2019 just before the COVID-19 pandemic swept across the globe and how it survived during the pandemic period. A key objective was to rekindle the sort of public sphere and civic society activism of the 1960s and 1970s, but now with the new affordances of cell phones and the internet, and to do so with a goal “not necessarily about enabling Kenyans to enter global conversations or showcasing their work so it becomes internationally recognized”; but “about connecting ‘already global local’ players with each other in Nairobi to spur a collection imagining” ([Okune 2021, 187–188](#)). Nor is it merely about “imagining,” but more what Michael Fortun and Herbert Bernstein ([1998](#)) once called “articulating” groups and situations so they interact (“participating in” rather than “sharing” a culture in A. F. C. Wallace’s formulation, or the pragmatics of “order-words” and uses in Gilles Deleuze and Felix Guattari’s terminology). As Okune says, to paraphrase “the technical scaffolding afforded by the RDS platform has enabled the conversation to continue (including meeting records, notes, audio recordings with verbal consent from all attendees), but our group holds together through monthly conversations, which go on regardless of what has been done on the technical platform” ([Okune 2021, 192–193](#)). That technical platforms are aides, not self-explanatory archives is something yet to be fully grappled with in the new digital age of collecting and annotating of more and more data inputs. (There are various accounts of Kibera, but for one that indicates some of the challenges of grass roots organizing, see [Odede and Posner 2016](#)).

Acknowledgements

I would thank the authors of each section and the collective endeavor—including Aalok Khandekar and Kim Fortun and Mike Fortun,—and Amanda Windle, the members of the Editorial collective, and Clément Dréano and Federico Vasen who helped on editing.

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