What Do Science, Technology, and Innovation Mean from Africa?

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This book is the culmination of a long-held dream to one day assemble a stellar team of mentors and colleagues to discuss a burdensome question: What do science, technology, and innovation mean from Africa? Put another way: What is Africa in science, technology, and innovation on the one hand, and what are science, technology, and innovation in Africa on the other?

The rationale for asking this question is that Africa appears on the technological map of the world as a blank or as a problem—in fact, as an oceanful of problems—to be solved. But solved by whom? It was very clear to me at the turn of the century that science, technology, and innovation seemed to be things inbound from somewhere outside Africa, usually the West—hence the whole notion of technology transfer as a North to South or West to non-West flow that would finally lift the continent up the development ladder in the hope that perhaps, one day, Africa would be developed. Therefore, the basis of the conversation about Africa was that it was a recipient of science, technology, and innovation, not a maker of them.

One cannot answer these difficult questions alone; it takes a village to raise a child. I have never believed in any one method; I believed even less that the European colonial academic traditions that have trapped the production of knowledge about Africa are enough—as free-standing disciplines, each aloof from the other—to even attempt to address the questions stated earlier. As an African scholar trained in science, technology, and society (STS) and African history, I believe in the necessity of having many eyes—a multiple optic—that looks at the same question, the same thing, from different viewpoints. For this book, the only requirement was that all of these many pairs of eyes should concentrate on African ways of looking, meaning-making, and creating and should take Africans as intellectual agents whose perspectives constitute authoritative knowledge and whose actions constitute strategic deployments of endogenous and inbound things.

I had in mind not simply using African voices as empirical fodder for us to then bring in Marx, Foucault, Derrida, Kant, or other (normally) Western scholars to order these voices into knowledge about Africa. In The Idea of Africa, V. Y. Mudimbe (1994) traced this
placement of a “Western ratio” at the center of ordering knowledge about Africa. He threw down the gauntlet right at our feet: Could it be possible to decenter the West and recenter African modes of thought?

Thus my hope was to assemble scholars who could go beyond critique—which Mudimbe did not do—by taking African knowledge seriously as epistemology on its own terms, and who could consider themselves (at least those contributors who are Africans by birth or descent) engaged in offering an African perspective. The latter meant that the force of argument was derived from an African point of view, with inbound epistemologies not forming the foundation of but rather constituting ingredients for an Africa-centered position. For scholars that were non-African, I was looking for colleagues who take African innovations and registers seriously enough to expunge Marx, Foucault, or other Western ratios from the base and spine of their argument—indeed, to use African vernaculars as modes of theory, even if they then engaged Western modes of thought and practice.

The question thus became one of methods. What archives could we defer to? How could we read them not simply as sources for our own writing and authority, as scholars like Jan Vansina, Henry Odera-Oruka, and Ngugi wa Thiongo had done in their albeit groundbreaking work, but as African modes of writing and authoritative philosophical texts in their own right? And given that most of these archives were simultaneously philosophies that had never been taken at their own value but were always filtered through the Western weighted scale of what is epistemology, philosophy, “proper historical sources,” and so on, how then should we approach them? How could we acknowledge the way in which writing is no longer pen to paper, or inscriptions on stone, wood, or human body, but the everyday mobilities that transform the human body and mind into the pen at large, inscribing what’s around it with marks?

These questions had decisive implications for the methods of assembling a team to address them. I could not gather all these scholars into one room at once, precisely because of the colonial disciplinary legacies of the production of knowledge about Africa discussed earlier, in which the language of engagement is normally barricaded into anthropology, history, geography, philosophy, engineering, and so forth. The task of assembling a team to address these questions had to be piecemeal and, even after this volume, continue to be refined and expanded, particularly because my intention has always been not only to produce usable knowledge, but to intervene practically in advancing Africa’s future through introducing multidisciplinary understandings of science, technology, innovation (and lately entrepreneurship) in society.

The first scholar I decided to include to meet this goal was D. A. Masolo, whose works had first been pointed out to me by my mentor, Mamadou Diouf, during his Reading African Libraries graduate seminar at the University of Michigan, Ann Arbor. Mamadou has this cunning habit of throwing around names that students who are serious about African intellectual history can follow up. That is how I was able to read Aime Césaire, Leopold Senghor, Kwame Nkrumah, W. E. B. Dubois, Frantz Fanon, Paulin Hountondji, Henry Odera-Oruka,
John Mbiti, Okot p’Bitek, Alexis Kagame, Ernest Wamba dia Wamba, Bogumil Jewsiewicki, Ivan Karp, George Shepperson, Kwasi Wiredu, Chinweizu, Adrian Hastings, Achille Mbembe, Paul Tiyambe Zeleza, Mahmood Mamdani, and Ngugi wa Thiongo. And, of course, D. A. Masolo, whose critique was that Ngugi, Odera-Oruka, and Vansina did not go far enough and left open—after negritude, after Pan-Africanism, after African socialism, and even after the “sage philosophy” that Odera-Oruka actively promoted—the search for new archives and modes of African philosophy. I approached these scholars as a learner, and I was looking to apprentice in the African way, in which elders impart knowledge to the young at close quarters.

The debt I owe to Mamadou Diouf for helping me understand the context of the question of the scientific and the technological in Africa from a combined philosophical, historical, contemporary, diagnostic, and prognostic perspective is, quite simply, unpayable. After my textual and face-to-face interactions with the above-mentioned scholars, it became quite clear that the issue at stake for the African reader of technology, the reader of technology in Africa, and better yet African technology, is not just the behavior of science, technology, and innovation but the intellectual work of making things and their strategic deployment. Can one see Africans as intellectuals thinking about and making technology based on intellect?

This question was an acknowledgement of what I had witnessed in everyday interactions with people in different parts of Africa, but even more so during my own childhood in Zimbabwe. In people’s mobilities I saw an archive, a statement, a critique, and an authoring of thought into reality through practice, operationalized through the movement of legs, hands, mouth, and other body functions. I wanted to locate the subject of conversation upstream of practice, to understand the intellection that drove it. Some micro-movements of and within the body were involuntary; the concern was with the voluntary actions, delegated by the mind-at-work.

STS had prepared me to understand one version of science and technology, to recognize it when I saw it. This was a vital skill—but it also turned out to be quite blunt for the nature of knowledge I was looking at. Conventional (Western) STS is good at identifying banal forms of science and technology but is severely limited in non-Western contexts, in which things scientific and things technological are not readily recognizable.

Here was the problem in the specific case of Africa. The project of addressing the meanings of science, technology, and innovation from Africa had to be philosophically grounded, because to my understanding the colonial ordering of knowledge had cut up African knowledge, knowledge production, and structures and modes of knowing into tiny pieces. What had once been a whole entity known as a composite was now scattered into specialist disciplines like philosophy, theology/religious studies, African languages and literature, history, economic history, anthropology, and so on. The philosophy I remember being taught in the University of Zimbabwe in the early 1990s was about Socrates, Plato, Aristotle, Kant, Marx, and so on. Where were the Africans?
The history I was taught was simply a subject; it was absolutely useless for addressing the everyday life I lived as an African or helping me solve anything. History as taught in school and college was—and still is—utterly elitist and decontextualized, to the extent that it is in danger along with most “arts and humanities” of becoming completely irrelevant for us as Africans. It is not enough to know where we came from, to learn the phonetic arrangement and diction of our languages, or to study theology to earn a degree or teach after graduation. This knowledge is disemboweled into pieces, yet it used to be one whole, inextricable from the practices and sites of production by which it was taught. That is why Masolo had to be present at the MIT workshop; that is why Mamadou Diouf had to be there.

The conversations with Mamadou began in grad school, but those with Masolo started in 2012. I was co-organizing the STS Colloquium with my colleague Michael Fischer, and we found ourselves converging on Masolo, whom Mike knew well from their time at Rice along with another emblematic Kenyan scholar, the late Atieno Odhiambo. We had wonderful conversations. The encounter was to be the beginning of a continuing conversation that endures to the present. Most recently, I have fulfilled my dream to pull together African philosophers and STS scholars, especially my PhD advisor Gabrielle Hecht and those African scholars whose work intersects with and has indelibly shaped my own. The result was the highly successful Anthropocene Campus seminar that I organized at the Haus der Kulturen der Welt (HKW) entitled “Whose? Reading ‘The Technosphere’ and ‘The Anthropocene’ from Africa.” The seminar included lectures from Gabrielle (STS), Masolo (philosophy), Chaz Maviyane-Davies (graphic design), and Shadreck Chirikure (archeology).

The intellectual exchange that resulted in Chirikure’s contribution to this volume occurred during a workshop I convened at the University of the Witwatersrand in 2014 during my three-year tenure as an inaugural Carnegie African Diaspora Fellow (CADF). Entitled “African Laboratories, Laboratories in Africa, Africans in Laboratories,” the workshop sought to explore meanings and practices of laboratory from African experiences, departing from its association with the built space, bench science, and, even where bench science was involved, in the hands and minds of Africans. Besides Chirikure (University of Cape Town, paper on pottery and metallurgy), participants also included Lauren Hutchinson (London School of Hygiene and Tropical Medicine, on Kenya’s first post-independence scientists attempting to decolonize malaria research and make it more responsive to local needs and knowledge) and Peter Sekibakiba Lekgothi (Wits, on African intellectuals whom colonial ethnologists and anthropologists employed as and called research assistants despite the “assistants” performing all the research and even authoring certain texts). Dilip Menon, director of the Centre for Indian Studies in Africa, chaired the workshop, which was well-attended beyond Wits. Chirikure’s paper and my introduction (this volume) were presented at this energetic workshop in the Senate Building.

The Wits workshop anticipated a second one I had finalized for MIT with generous funding from the Program in Science, Technology, and Society and the Dean’s Office in the School of Humanities, Arts and Social Sciences. David Kaiser and Deborah Fitzgerald were
the director and dean at the time, respectively, and appreciated the importance of the question—the title of this book—in the global discussion in STS. The workshop, held over two days, November 13–14, 2014, was a culmination of a long process of identifying colleagues from different fields of enquiry and bringing them under one roof to engage in what Zimbabweans call *kuonesana*—helping each other see from perspectives besides one's own.

I had met these colleagues separately and individually; many were seeing each other for the first time. Gillian Marcelle (innovation policy) had facilitated my visiting professorship at Wits, and we shared a passion for innovation policy in the present. Katrien Pype (anthropology) had spent a year on a Marie Curie fellowship in the Program in STS at MIT, and we had also convened a successful workshop on “Technology and Mobility in Africa” at KU Leuven in October 2013. Also, we had begun to think of a special section for the new mobilities journal *Transfers*. I had never met Gloria Emeagwali (history), but had read her work and actively followed her attention to indigenous knowledge as a historian. Kristin Peterson (anthropology) was already a friend of many years dating back to the University of Michigan, when I was a graduate student and she was starting out as an assistant professor at Michigan State University. We used to sit for hours in Espresso Royale on State Street, Ann Arbor, discussing Africa over coffee. She had suggested that Olufunmilayo Arewa (law), her colleague at UC Irvine, would bring a needed perspective to the volume. Toluwalogo Odumosu (engineering/STS) was introduced to me by Garrick Louis (engineering and public policy), whom I had met at the Brown International Advanced Research Institutes (BIARI) summer school in 2013. The person who had invited us both was Geri Augusto (international and public affairs and Africana studies). I had read cyberneticist Ron Eglash’s work on African fractals in graduate school, and it had given me confidence that the questions I was asking were not cuckoo. Ellen Foster (STS) was his student at RPI. Alvan Ikoku (comparative literature/medicine) was doing interesting work on Kenyan literatures. Rudo Mudiwa was a graduate student at Indiana University, one to watch for the future but who was still at an early stage in conceptualizing her project. Mamadou Diouf and Masolo were supposed to attend, but personal circumstances robbed us of their much-anticipated presence.

There was good attendance—from colleagues in the Program in STS and beyond. Rosalind Williams gave the welcoming address. Michael Fischer was there from start to finish, as were Abha Sur and Hanna Shell. Many graduate students were in attendance, not least the members of the memorable Introduction to Science, Technology, and Society course I had the pleasure of teaching in 2014. In particular, I wish to thank Peter Oviatt and Ashawari Chaudhuri for helping Judy Spitzer and Randyn Miller with the logistical work. This is also a project first conceived while Marguerite Avery was an acquisitions editor at the MIT Press and that Katie Helke is seeing off wonderfully into publication. This project would be impossible to achieve without a department and school in which if one has good ideas that advance STS in new directions, no effort is spared to realize them.
All in all, the biggest challenge of bringing together diverse voices steeped in their disciplines and practices is that it shakes every participant out of their comfort zone. Sometimes it can lead to heated argument. Yet the reason I enjoy bringing people together from diverse cultures of doing things is exactly that: to avoid knowledge production becoming an echo chamber, and to set up a vibrant multi-optic crucible within which new ideas are forged. For that I pay homage to everyone who participated in the MIT workshop.

As you can tell from the table of contents, not all of the papers from both the Wits and MIT workshops made their way into this book. This was in no way due to a lack of quality but to sticking to deadlines democratically agreed to at the end of both workshops. There was also an editorial question to address of striking a balance between the disciplines represented at both conferences.

It was through Gillian Marcelle that I was able to meet Chux Daniels of the University of Sussex Policy Research Unit (SPRU). On November 28, two weeks after the 2014 MIT workshop, Gillian convened a panel to discuss Africa’s development blueprint: Science, Technology, and Innovation Strategy for Africa (STISA). At the time, she had just taken up what turned out to be a brief venture as deputy executive director (DED) in the Centre for Science, Technology and Innovation Indicators (CESTII) in South Africa’s Human Sciences Research Council (HSRC). The workshop included, among others, Daan du Toit (deputy director-general for international cooperation and resources in the South African Department of Science and Technology), David Ockwell (deputy director of research at Social, Technical and Environmental Pathways to Sustainability [STEPS] UK), Hambani Masheleni (African Union Commission), and Chux Daniels, who was then finishing his PhD at SPRU. This workshop was also my introduction into science and technology policy circles in Africa.

Gillian Marcelle was supposed to write the chapter on policy for this book, but she was still settling in as the executive director of Research and Technology Park in the British Virgin Islands. Therefore, Chux stepped in to take her place—thus mitigating what was a potentially big loss. Since the HSRC workshop, Chux and I have since continued the conversation, co-convening a successful workshop at the Institute of Development Studies at the University of Sussex in 2015. We are currently editing and transcribing the video footage, with the aim of coauthoring a book on the diaspora in science, technology, and innovation policy and numerous multimedia products. The chapter from Chux crystalizes where we are in terms of the state of debate on the subject; the book seeks to go beyond critique to show how the African diaspora could be positioned as a serious factor in Africa’s prosperous future.