

# MedTech in Tanzania

## Reflecting and Making Judgments

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### Abstract

Studying cutting-edge technologies in the domains of medicine built by Tanzanian experts operating on the margins of global techno-science has often led me to fall into a Manichean outlook. That is, seeing these processes in which technologies are built *from* rather than merely *for* the country, as either dispiriting evidence for another technological fix or as an encouraging sign pointing towards the building of new sovereign techno-science futures. Given our own expertise as social scientists, we are expected not to succumb to such binary reasoning and develop more sophisticated approaches. In this Position Piece, I propose that given the doggedness of such binaries that I suggest we might all be liable of falling into, we should work hard to develop a curiosity and reflectiveness about our own judgements and the process of making them.

### Keywords

Technology, Medicine, Innovation, Reflexivity, Africa.

## Introduction

Since 2019 I have been following Tanzanian scientists and technologists experimenting with machine-learning techniques in the fields of health and medicine. I have spent time in labs, health facilities, and offices across the country, as well as in meetings and conferences both online and in other East African countries. During this fieldwork, I have encountered a range of innovation-related activities, from the development of a smart microscope that automatically analyses *plasmodium falciparum*-infected blood slides, to the piloting of an app that produces differential diagnoses based on patient symptoms.

Not all these innovations in Tanzania reach the health sector, but some do, often through pilots. There they spark conversations and anxieties about how they encode and even displace healthcare expertise. They also change the distribution of expertise across sectors, as data scientists and technologists become increasingly sought after to solve health problems.

Those scientists and technologists in Tanzania regularly discuss their expertise, sometimes in response to my questions and at other times as part of their normal work, for instance when they present their work at conferences or in health facilities. They talk about the historic lack of human expertise in the health sector in the country, often in the context of arguing for the need for automation. Yet, they also speak of how the automation they are trying to build depends upon their interactions with medical science colleagues and health professionals from Tanzania and beyond. They talk about their own knowledge and skills, and their hopes that in building it they might mount a challenge to the global hierarchical distribution of technological and scientific expertise.

Researching these experts and listening to them discuss the possibilities and implications of their expertise has led me to reflect upon our own analytical expertise. Specifically, the kinds that draw on critical insights challenging 'power and its disguises' (Gledhill 2000). This reflection has, in turn, led me to consider the implications of our analyses on the growing digital and algorithmic interventions in health. This is for two reasons. On the one hand, these interventions led by Tanzanians challenge long-standing trends situating the country, as well as the wider Africa continent, as a recipient rather than a source of technological innovation. And on the other hand, they often leave unchallenged a status quo in global health that champions technological solutions delivered through the market, marginalising other approaches that might strengthen healthcare services. To think through these issues, I offer an extended analogy.

I recently returned from a five-week trip to Tanzania where I caught up on recent developments in my field of research. I packed light for my journey there, partly so

that I would not have to worry about my bag being lost or delayed on the flight. I took only a few clothes, paid to have them washed, and picked up some *mitumba* (used clothing) while I was there. However, when it came time to travel home, I conceded defeat, and checked a piece of luggage into the hold for my return flight from Julius Nyerere International Airport. This was because I had acquired gifts: ones given to me by old friends, and ones I wanted to take back for my family back home. I could not discard these gifts very easily.

Into my fieldwork, I have carried other things. These have included theories, even if only half-remembered. But they have also included assumptions I have had little time or inclination to scrutinise, intuitions that I have sometimes felt too fragile to inspect, and values, some of which I think are strongly held but others that have weakened without me even realising.

## Binary thinking

Theories are a bit like clothes. A few items of clothing can be packed before fieldwork, while others must be left behind. Clothes can be reworn, and new ones can even be picked up locally. And over the last few years I have toyed with different theories. However, the gifts that thwarted my plan to travel light are different. They are like the other stuff: the values, intuitions and assumptions. This stuff isn't light and easily shed, and sometimes during my fieldwork I have found my mind returning to them. In my mind's search for order, or perhaps finality, it seems to find (dis)comfort in a binary. This binary has been as vexing as it has been distracting, jolting me sometimes out of my immersion in the worlds I am studying. Admittedly, this does make them somewhat dissimilar to the gifts that anthropologists have long enjoyed studying. In order to think of a way out of this binary, I think it is helpful to think through it. I begin, then, in taking each side of the binary to a fairly extreme position, before considering their implications and, ultimately, suggesting some ways forward.

On one side of the binary is a thought instilled in me, at least in part, by my immersion in the literature produced by critical studies of global health (for a useful review of its rhetoric see Baldwinson 2022). This thought is that in studying the innovation of digital medical and health-related technologies by Tanzanians I am witnessing something rather dispiriting.

There are several reasons for this, of which only a few can be mentioned here. One is that this innovation is regularly financed by philanthropic and other forms of private capital, often from overseas, and thereby seems likely to interfere with the value of a national public good. But other reasons are more closely related to expertise itself. Tanzanian technologists aspire to develop and expand digital medical technologies to address the shortage and uneven distribution of trained

medical professionals across the country. But this aspiration is driven not only by the goal of quality healthcare, but by a sense that the alternative, that is, trained doctors and healthcare professionals, is unfeasible. Relatedly, when technologists and others promote a specific type of expertise in technology, it can overshadow other valuable forms of knowledge, such as the extensive evidence supporting systematic approaches to healthcare improvement. Finally, is the usual concern that digital technologies expand the quantification and datafication of healthcare (Adams 2016). The appropriate and common critical response is therefore to denounce what is described—often using suitably denunciatory language—as a hyper-capitalist, datafied technofix that fails to tackle the real causes of inadequate and accessible healthcare systems. It might be Tanzanians taking a more significant role, but they are still, apparently ‘Moderns’, and moreover, heavily shaped by the philanthro- and venture-capitalist hand that feeds them.

The other, opposing, thought is that I am witnessing something rather inspiring. Machine learning is an exciting new knowledge and material practice that creates some impressive results in various areas. Moreover, it may have real potential for medicine and health in Tanzania, a country that has long struggled to train and retain its healthcare professionals. But more than that, for so long, Africa has relied upon the importation of medical technologies. Yet here are Tanzanians, who are increasingly joining with other African experts to create technologies that they see as being built from Africa and designed for the continent’s needs. Yes, the idea of ‘local’ is a chimera, as their innovations depend on their relationships with outsiders, but this neither negates something being African (see also Táíwò 2022) nor says anything particularly new in relation to Tanzania’s history. The first president Julius Nyerere’s socialist plans were partly drawn up by foreigners embedded within the government, and Nyerere even invited the US management consultancy McKinsey to help implement the plans. And, of course, in order to implement his socialist plans Nyerere and his government drew upon a range of outsiders, from China to Russia to the US. And, as others have shown, in Tanzania, a country with a legacy of strong state institutions, the state retains significant control over private and foreign actors. Furthermore, while history tells us one thing, it might be helpful to listen carefully to the Tanzanian technologists when they imagine leapfrogging linear paths of progress to create new healthcare and medical futures.<sup>1</sup>

I am clearly not alone in such binary thinking. New technologies regularly provoke such polarising reactions. Moreover, they map quite neatly onto the more general opposing reactions of the handwringing of ‘techno-apocalypses’ and the ‘comic faith in technofixes’ that Donna Haraway has urged us not to succumb to. We must,

<sup>1</sup> Of course, such leapfrogging imaginaries are neither new nor exclusive to Tanzanian technologists.

she famously warned, ‘stay with the trouble’ by recognising that technology is not the enemy, and moreover, that it is ‘important to embrace situated technical projects and their people’ (Haraway 2016, 3).

But what counts as situated? These Tanzanian scientists and technologists are not the radical Others so beloved by anthropologists looking for alternatives, including technological ones, to dominant Euro-American lifeworlds that have colonised minds and bodies. For those anthropologists, real epistemological (or cosmological or ontological or whatever you choose) alterity would presumably come from the realms of what Tanzanians call *uganga* (healing) or *uchawi* (witchcraft), or *kienyeji* (indigenous), even though those same anthropologists would acknowledge one will find hybrid rather than pure forms. But where does this leave the Tanzanian scientist and technologist?

## **An alternative science and technology**

One option is to join the many anthropologists who believe it—and in referring to it, I purposefully remain vague—is perhaps not as bad as we think it is. Or should I say, not everywhere is as bad as we think it is. Perhaps the norms of state-provided social welfare persist under neoliberalism (Collier 2011; Ferguson 2015), perhaps the state itself is not really so impotent against the private or philanthropic sector (Hull 2022), or perhaps our modern interlocutors still have ethics we need to consider, or at least capacities to be sceptical that should be acknowledged (Candea 2013; Seaver 2021). In true anthropological fashion these scholars argue we need to look more closely, be more nuanced, to show not all the world, not every public-private partnership, not every social policy, and indeed not every rush to a cutting-edge technology is necessarily detrimental to the things that we value, like a better, more just world.

But what—to remain a little hyperbolic—is the point of these sorts of approaches and findings? One point is that it shows the world to be more diverse than it is commonly portrayed. This isn’t an exercise in butterfly collecting because the point is often a political one too; to show that another world is possible and inspiration can even be found in the contingencies of the worlds that seem so familiar to us. It requires us not to fall into definitive moralistic thinking between the good and the bad.

But as inspiring as these sorts of anthropological insights are when I read them, they seem to slip away when it comes to my own research and fieldwork. It is often difficult to recognise and embrace nuance and difference amidst the accumulation of technological ruins. Or when Big Tech and its venture capitalist backers seem to have conquered much of the world, and increasingly the African continent. Or when the continent seems to perpetuate a trend with deep historical roots of acting

as a playground for biomedicine, now accompanied by bits and bytes. Indeed, every time I read that we should ‘stay with the trouble’ a tweet from media scholar Dominic Pettman pops into my head. ‘Even Donna Haraway didn’t realize just how much trouble we’d be obliged to stay with,’ he quipped (Pettman 2022). The tweet, flippant as it is, gives us pause to consider where the limits are to our capacity to stay with rather than denounce what we find most troubling. From our well-honed critical inclinations, captured in this tweet, perhaps the only reasonable and ethical response should not be to dwell on the troubles and ambiguities of MedTech (always capitalised) but to denounce it for what it is.

It often seems easier to be cynical and denounce. I believe part of the reason is that we are faced with an overload of the opposite, of what is sometimes called techno-optimism. It makes some sense that we react to optimism—particularly when peddled by the powerful—with scepticism. But here my worry is that we end up giving even more power to the powerful. My concern isn’t the fairly well-worn one that cynicism towards something ostensibly good, like efforts to improve health, may weaken rather than strengthen it. Instead, it is that we are allowing the powerful the capacity to provoke that very cynicism and despair in us. It is also here then where the popular bifurcation between an anthropology of the good, which is generally aligned with optimism, and what Sherry Ortner (2016) calls the more cynical ‘dark anthropology’ may not serve us well.

## **Embracing nuance**

In a world in which it often feels like we are increasingly asked to choose sides, the best defence might be to refuse and embrace nuance instead. Nuance might not always be considered the most courageous analytical strategy (Healy 2017)—although I would argue it is when the academic tides push towards a problematic abstraction or generalisation—but it might be a decent start for a more politically engaged academic approach. But it should only be a start. As Joel Robbins (2023) has recently suggested, we might also need to think more about our own ways of making judgements. How do we come to think of something as good or bad, or how do we come to envisage the future, and what do we do with those judgements? How do our judgements effect our fieldwork, our analysis of what we see and hear, and how we come to write about it? For instance, there have been times when I have conducted fieldwork with others only to discover afterwards that we found different things more interesting and worthy of scrutiny. And when we come to produce our analyses, what responsibilities, (even if only imagined) do we assume when we make those judgements and engage in resultant actions? What are the pathways, for instance, that we imagine our analyses travelling in order to enact change? How do these imaginings shape, and how are they shaped by, the analyses themselves?

To conclude, the digitalisation and datafication of health are reshaping expertise in Tanzania. New forms of expertise, such as data science, are emerging and are generating changing technological and scientific forms of personhood. These changes also impact existing expertise, often generating anxieties, as reflected in frequent media reports.

In our analyses of such changes, we rely upon a well-cultivated expertise that draws from our own reservoirs of knowledge, ranging from theories of power to bodies of evidence highlighting effective strategies for strengthening health systems. However, I have suggested that the digitalisation and datafication of health also have implications for our expertise. The reshaping of expertise presents an opportunity for us to examine our role as experts and reflect on how our analyses reflect our judgements and the processes of making them.

The challenge is not merely to be reflective about what we write nor to call conclusively for a particular type of scholarly output. Instead, it is about cultivating a curiosity within our expertise concerning our judgements and our commitments. These questions are for me akin to the gifts I received during my recent trip to Tanzania. They are relational to the core, intertwined with my life, the lives of those I study, and our collective futures. They cannot be discarded but can be inspected and reflected upon.

## Authorship statement

I am the sole author of this work.

## Ethics statement

In Tanzania, the research received ethical clearance from the National Institute of Medical Research and research permission from the Commission for Science and Technology. Additionally, the data processing for the research was approved by the Norwegian Centre for Research Data, ensuring compliance with data protection legislation.

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