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P. Wenzel Geissler & Noémi Tousignant

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INTRODUCTION

Capacity as history and horizon: infrastructure, autonomy and future in African health science and care

P. Wenzel Geissler and Noémi Tousignant

Introduction

Capacity and its amelioration have become ubiquitous in (post-)development discourse on Africa. The creation of *African* modern institutions and technical expertise – for government, education, medicine and science – was identified as a priority in the lead-up to decolonization, and was a central goal of post-colonial Africanization programs and technical cooperation. Yet the vocabulary of capacity building rose to prominence (again) in the declarations of international meetings and institutions from the late 1980s, when it came to signal a rejection of the paternalism, short sightedness and narrowly economic focus of prior approaches to development, and at the same time deflected attention from the massive infrastructural decay occasioned by dwindling transfer funds and ‘structural adjustment’ policies. Capacity became principally about ‘people’ – their empowerment and participation – and safeguarding the sustainability of finite foreign aid and environmental resources (e.g. Eade 1997). During the 1990s, advocacy groups promoted health research for and by the Global South (e.g. the Commission on Health Research and Development (1990) and the Global Forum on Health Research (1996)). Research funders and foreign aid institutions – including the British Wellcome Trust and Department for International Development, or the US National Institutes of Health, and especially some smaller bilateral agencies such as the Danish Agency for International Development – committed to reinforcing research capacity in Africa through specific training programs, and adopted requirements for funded North–South collaborative projects to include, be led by and strengthen the capacity of, African partners (Whitworth, Kokwaro, et al. 2008). The rising number of studies and trials conducted by Northern universities and public health agencies in Africa during this period were, in this context, proclaimed as ‘partnerships’ with local institutions and actors, with the corollary of collaborative capacity transfers (e.g. Crane 2010; for informal capacity making see Aellah and Geissler 2016). Since the early 1990s, then, reinforcing research capacity, along with the humanitarian call to save lives, has played a key role in garnering support for global health as a morally unambiguous but fundamentally apolitical enterprise (e.g. Adams 2016; Biehl and Petryna 2013; Bornstein and Redfield 2011).

And yet, this rise in collaborative research, and the surge in funding for global health interventions have generated relatively little investment in the capacity of African state-run public health systems as a whole. Much research, such as studies of the efficacy of bed-nets, home malaria treatment and HIV prevention, for example, or semi-experimental, multi-country vertical treatment programs, sought to develop cheap, simple interventions and

'appropriate' technologies that 'communities' might deploy themselves without requiring the restoration of a functional national health infrastructure. Accordingly, such programs, as well as large-scale treatment initiatives for HIV or tuberculosis funded by single Northern agencies or Northern-led consortia, have despite their capacity-building agenda been accused of bypassing – and even undermining – national health systems (e.g. Parker and Allen 2013). In response to such critiques, 'health system strengthening' and attendant funding for health systems research and capacity building has, in the last few years, become a familiar but not commonly heeded plea – although recent calls for 'universal health coverage' may herald a reversal in policy frames (e.g. *Lancet* 2012).

This special issue does not trace the growing centrality of the 'capacity imperative' in global health and development discourse, nor does it seek to diagnose its failures. By moving out of the realm of calls and declarations, philosophies and manifestoes, proposals and evaluations, we seek, instead, to recover some of what capacity building elides and obscures: the political and moral charge – for African scientists, clinicians and patients – of skills, technologies, careers, knowledge and care; the contested values, power and futures that capacity might perturb or activate; the *incapacities* that global health capacity-building initiatives are rooted in, thrive on, reinforce or reproduce; as well as the existing capacities and dreams of capacity that these initiatives often fail to acknowledge, invest in, or engage with. Through the careful analysis of aspiration for and enactments of *African* capacity, the six contributions to this issue re-open the political, ethical and temporal horizons that are linked to – or cut off from – discrete components of medical research and care, such as laboratory apparatus, diagnostic skills, national science policies or study subjects and bioethics. The contributions seek, in various ways, to re-politicize capacity in Africa, with more general implications for what is euphemistically referred to as the 'Global South'; to recognize capacity as a form of *power* to act on the world and produce effects, that emerges from, is contested within, and acts on social, institutional and material processes as they unfold within specific locations and histories in a world of unequal life chances, resources and opportunity. At the same time, they relocate capacity in the pursuit of 'good' science and care, defined not just as technological efficacy, but also in terms of personal and collective duty, service, pleasure, success, sovereignty, autonomy, membership and progress.

As a pragmatic strategy to improve wellbeing, an ethical commitment to fair and sustainable collaborations, or a political project to reverse long histories of spatial imbalances of power, knowledge and resources, capacity appears as an undisputed good. Getting more of it to capacity-poor Africa is a goal widely shared by African experts and their partners in the capacity-rich world. But what kind of good is capacity? Dreams of capacity can be big or small, conservative or radical. Capacity building can be measured in numbers of training seminars and degrees conveyed, individuals indoctrinated into externally defined 'good practices', or checked off as criteria for the fairness of transnational collaboration. But it may also be seen as political-economic critique: as an attack on the lasting legacies of domination and impoverishment that have constrained Africans' ability to make knowledge and provide therapy, or to imagine altered futures of African collective protection and participation in global science. Indeed the ability to nurture ambitious dreams – individually and as a collective – may be a valuable and under-recognized capacity in its own right (Geissler and Tousignant *in press*). The contributions to this issue explore these multiple political-ethical registers and scales of aspiration to health capacity, both in and beyond initiatives labeled as 'capacity building', illuminating their omissions, contradictions and ambiguities. Collectively,

they ask: what kinds of tensions arise in and between the making of good institutions, good collaborators, good careers, good science and good health? How do these different goals converge, and what successes, satisfactions, problems, dilemmas and disputes arise?

Capacity raises concrete, practical questions about how it should be defined, planned for and invested in (e.g. Okeke 2009; see also Petti, et al. 2006), but it also elicits theoretical issues pertaining to the imbrications of knowledge and technology with space, temporality, values, lives and bodies, as a fluid, distributed form of power (Redfield 2016). (In)capacity invites reflection on the political-economic constraints on the distribution of resources and the power to act, but also on the potential for imagining altered futures of justice, responsibility, belonging, citizenship and collective welfare. Capacity also links the present to the past and to the future; as the durable materialization of prior investments; as learned skills, sequences and modes of interaction; or as potential to anticipate, act upon and transform. Capacity is meant to last, but to do so it must be remembered, accumulated, repaired and protected (Tousignant 2013a; Graboyes and Carr 2017; Mika 2017); indeed, regular, continuous and cumulative activity can be seen as a condition, or even a distinct form, of capacity (Tousignant 2013b). Infrastructure can also decay and disintegrate, or leave remains that inflect and reorder future potential in unexpected ways (Geissler 2014a; Geissler et al. 2016; Tousignant 2013b). Capacity thus arises from and acts upon dynamic relationships between materiality, time, skill, action, value and people – sometimes in unpredictable ways, which is where ethnography can make its distinct contribution.

Building on incapacity

(Re-)constituted since the 1980s as a landscape of lack, defined by absences and negativity (e.g. Ferguson 2006; Mbembe 2001), Africa featured prominently in a global turn to capacity building, notably in the World Bank's reconceptualization of development in the late 1980s to address 'weaknesses' in the public sector left (or made) by measures of 'structural adjustment' (World Bank 1989). The capacity imperative – with its emphasis on public sector strengthening, and community empowerment and participation – appears here as both solution and accomplice to a longer, ongoing history of *incapacitation* of African public science and care (Geissler 2014b; Gilles-Vernick and Webb 2013; Prince 2013; Waast and Krishna 2003). From the late 1970s, state spending on health and scientific infrastructures – that had barely begun to expand and solidify in the name of late colonial and post-independence development and Africanization – was cut. Hiring was frozen, the renewal of medical and scientific supplies slowed or halted, making it difficult to dispense care, create knowledge and train competent experts. Bilateral and multilateral funding for technical assistance programs fell under the pressures of worldwide recession and austerity in the 1980s, and was further slashed after the end of the Cold War (e.g. Alubo 1990). The effects were intertwined with and amplified by national 'politics of the belly', corruption and mismanagement in many sub-Saharan African countries (Blundo, et al. 2006; see Mostert, et al. 2015). The 1990s and 2000s brought large-scale privatization of public health and higher education, while private clinics and universities proliferated in urban centers (e.g. Prince 2013; Turshen 1999). This erosion of public infrastructures – and the proliferation of non-governmental and private initiatives in the absence of state care and science – drove a wedge between health and citizens' rights, public welfare and collective visions of civic progress (Loewenson 1993; Price 1988; Prince and Marsland 2013; Riddell 1992). Capacity rose thus

to prominence because, with the demise of the post-war, post-colonial national welfare state and its health systems, it was no longer obvious what capacity meant. The concept emerged to label a gap, just as 'the community' and its elusive 'empowerment', during the same time, became keywords of international aid precisely when the primary modality of collective belonging and entitlement – national citizenship and the social contract it entailed – lost purchase.

Under these conditions – of gutted state institutions of care, research and higher education, and abandonment of the collectives and futures towards which care, expertise and knowledge had been oriented – what kinds of capacity is it possible to cultivate? Transnational collaboration in health research and quasi-experimental interventions (see e.g. Nguyen 2009) have emerged as the dominant mode of health capacity building in Africa. Although such collaborations seek to make up, to some extent, for inequalities in expertise and resources between Africa and elsewhere, the 'scramble for Africa' as a site of transnational health research and intervention has also been predicated on the lasting lack of African capacity to investigate and treat HIV (Crane 2013; Gilbert 2013). Moreover, the proliferation of collaborative initiatives has concentrated resources in 'islands' of globally connected and well-equipped science and care, replacing more contiguous geographies of solidarity, protection and welfare – or aspirations towards these – with an archipelago of health capacity (Geissler 2013a). To gain capacity, African scientists and clinicians often seek to become 'collaborators', frequently at the expense of autonomy in setting and pursuing priorities of knowledge and care (Droney 2017; Waast and Krishna 2003). Indeed, the idiom of collaboration often veils underlying and persistent inequalities in resources and authority (e.g. Crane 2013; Fullwiley 2011; Moyo Okwaro and Geissler 2015; Okeke 2017; Whyte and Whyte 2015). Power differentials inherent to transnational collaboration can, if unarticulated, permit 'cosmopolitan' assumptions about the kinds of capacity needed in Africa, thereby silencing the judgments of African health professionals on the kinds of knowledge and support that would actually increase their capacity to act (Feierman 2011; Wendland 2017). Moreover, 'vertical' programs, for example targeting the control of a single disease, attract state personnel and funding seeking to capture further capacity-building resources, thereby leaching capacity from other areas of the health system (e.g. Larsson, et al. 2009; Parker and Allen 2013; Whyte, et al. 2011).

Another response to systemic incapacity has been to develop modes of intervention that can function without heavy national machineries of healthcare delivery, expertise, democracy and accountability. What Peter Redfield has called the 'miniaturization' of medicine and the 'microworlds of humanitarian design' reduces capacity to lightweight, portable technologies such as drug and testing kits and innovative 'humanitarian devices', which anticipate the absence of state infrastructure and minimize the need for greater public commitments (e.g. Redfield 2008, 2012, 2015). 'Community participation' or 'empowerment' – common references in the capacity-building discourse – likewise seek to make health research and care function efficiently and ethically with minimal investment in infrastructure. Participation is also often facilitated by self-contained technologies such as impregnated bed-nets and simple treatment protocols using drugs in fixed-dose combinations and blister packs. Like such 'minimalist' materializations of capacity, the underlying fiction of 'people's capacity' often sidelines formal political processes through which experts and publics can make and negotiate demands and decisions (Cooke and Kothari 2001). In some ways, then, terms like capacity, community participation and empowerment index a loss of power rather than its

enhancement. These terms also black-box political-economic choices and conditions, presenting an indisputable surface of value – of which the only possible vice is ineffectiveness – that deflects any real political debate about African scientific or therapeutic sovereignty, protection and citizenship.

As especially anthropologists have sensitively documented, African scientists and clinicians have also become adept at improvising or stretching capacity with scarce equipment and supplies, as well as to find collective strength and critical energy in humor, laughter and irony (e.g. Droney 2014; Langwick 2008; Livingston 2012; Mulemi 2008; Tousignant 2013b; Wendland 2010). While these acts may mobilize uniquely relevant forms of capacity (Wendland 2017) and enable the fulfillment of moral obligations of public service or professional and institutional survival, they rarely add up to more than partial, provisional manifestations or performances of care and research that fail to protect or treat, or to procure professional satisfaction (see e.g. Okeke 2009). The necessity of improvisation in itself draws attention to the singularity of medicine and science in Africa and its distance from cosmopolitan ideals and standards of quality – a discrepancy that, as Claire Wendland shows (2012), can unleash political capacity by raising critical consciousness.

The capacity carried in transnational partnerships or mobile technologies, or improvised by empowered communities and resourceful, committed individuals, seems small in the face of the legacy of decades of structural incapacitation. These limited forms of capacitation are not only challenged by, but also, in some ways, mutually constitutive with a broader, more durable continued erosion of capacity.

Capacity beyond capacity-building

Yet health capacity in Africa is worth attending to not only as absence, loss and illusion, but also – even if only partial, residual, latent or dreamt-of – as a guide for rethinking, following Wendland in this issue, what capacity might be, do, carry and generate. As something to be ‘built’, capacity is often treated as an inherent property of an object, actor or system, which can thus be delivered or deployed, transacted between haves and have-nots. By moving beyond the delimited timespans of the capacity-building ‘era’ and of specific capacity-building projects, the contributions to this issue also point to capacity as potential, projection and direction, as collective memory and futures, as imaginaries of transformation. In this extended temporal frame, capacity comes into view as a longstanding goal tied to prior social and political projects; as a distributed property of materials, skills, institutions, persons and groups that can be remembered or forgotten, that accumulates, decays, remains and is recomposed; and as a project that takes effect in the future.

The capacity for anticipation itself, then, is required to effect change. Capacity is not only a quasi-material precondition for realizing dreams of the future. The capacity to dream, collectively and as an individual actor, to anticipate change and thus move towards different, improved futures, is in itself a vital form of capacity that is to be appreciated, maintained – and built. Dreaming-as-capacity is not simply to be measured, or discounted, against future success or failure, but can energize medical and scientific activity – as political and social action – for improved health. Inversely, a lack of capacity to dream a path from present to future, an entrapment in current impossibility and inelasticity that can only be addressed with rationing or resignation, or escaped into the hype and delusions of miraculous innovations and forecasting of catastrophic health crises, can lead to paralysis, frustration and a

sense of futility. As Guillaume Lachenal (2015) has pointed out in his lucid analysis of PR-savvy virus-hunting, the absence of concrete, potentially transformative dreams anchored in contemporary suffering, and their replacement by the forecasting of fictional future pandemics disengages from, and exacerbates, present incapacity, while generating only incapacitating delusion; a nefarious mirage of action that is, in the end, a form of inaction and nihilism.

To locate capacity beyond intervention targets is also to take an African studies perspective on the fields of power in which capacity is sought and comes into play. It illuminates the frictions and possibilities navigated by individuals who seek healing and knowledge, by professionals striving for mobility, satisfaction and the fulfillment of responsibility, and by national institutions trying to function and improve, or to maintain the appearance thereof. The contributions to this issue show how the specific forms of power encapsulated by 'capacity' – the skills, technologies and infrastructure that are transferred, built or sought out – are deeply entangled in other forms of material, political and symbolic differentiation and domination. These include affirmations of national sovereignty (Andersen 2017; Droney 2017) and hierarchies of scientific work and workers (divided by race and nationality, but also gender, class and theoretical versus applied science, Droney 2017 and Graboyes and Carr 2017), as well as accusations that identify national and global policies as causes of ill health (Wendland 2017). Indeed, to gain capacity as an African health worker or scientist often entails negotiating unequally weighted interactions with Northern partners or donors, but also emergent local relations of class and gender, and the formation of expectations about advancement, privilege and duty (Geissler 2013b; Geissler et al. 2013).

Capacity, even as a project for the future, is embedded in the ideals, stakes and material traces of prior imperial, national and internationalist projects for education, public health and research. Thus health capacity in Africa must also be looked for – as ambition and direction – in the ambiguous material presence and partly erased legacies of *past* investments in and aspirations for better health (Geissler 2011; Geissler and Lachenal 2016; Ghyselen et al. 2017; Tousignant 2013b). Past capacity can be kept or lost, but present capacity is also made – as Melissa Graboyes and Hannah Carr provocatively suggest in this issue – by relating to past action and knowledge in productive ways. In Graboyes' and Carr's case study of East African medical research institutions in the late colonial and early post-colonial periods, capacity is jeopardized by institutional resistance to remembering past failures in ways that might guide future action and reorder the social roles and relations of scientific work. Instead, the non-documentation and stylized narration of past conflicts confirmed underlying assumptions about (good) scientists and (bad, African) subjects. In these ways, past failures were 'forgotten', and were thus lost as potential 'lessons' for improving the relations of medical research in Africa. In other sites of repeated encounter between scientific institutions and research populations, memories of accrued generosity and debt have played an important role in facilitating the conduct of valid scientific work, while at the same time narrowing the scope of demands for benefits and capacity (Geissler and Lachenal 2016; Ouvrier 2014).

Historicizing capacity can also uncover more ambitious and explicitly political projects for African science and health in the past, in which technology, expertise, knowledge and institutions heralded a fully modern and truly sovereign Africa, at once distinctive and equal (Droney 2014; Osseo-Asare 2013; Kilroy-Marac 2013; Kusiak 2010). As Casper Andersen's article in this issue tells us, UNESCO's activities for science and technology in Africa were, in the post-independence decades, framed in terms of fostering scientific autonomy as a prerequisite for political independence. To some extent, the language of capacity building

simply rebranded these ongoing programs. Yet, as a Program Specialist cited by Andersen points out, this semantic shift also depoliticized the end goal of capacity, moving from national self-determination towards the neutral value of the (global) common good.

Like Graboyes and Carr, Marissa Mika traces institutional capacity as it is made, lost and maintained over time, not through documentary or narrative memory, but through routines and infrastructures that sediment and are cultivated, but which also decay, rust and can no longer be animated. Identifying the various capacity resources generated by a cancer treatment research partnership in 1960s Uganda, Mika describes their fate over the following decades of violence, instability and austerity. Keeping infrastructure in action, she shows, depends on the continuous labor of African clinicians and patients. Yet infrastructural components of research and care, such as buildings, data sets and clinical routines, are more resilient to loss of investment than are the treating and feeding of patients, or travelling in the field, which require regularly renewed supplies of drugs, food and fuel. Mika's analysis suggests that the performance of partial capacity – such as doing meticulous ward rounds when chemotherapy stocks are exhausted – is, like improvised capacity, an ambivalent good. On the one hand, it appears as illusory capacity, an 'empty' performance that does not lead to health improvement. On the other hand, 'performing' as a good nurse, doctor, scientist or institution may not only attract future capacity building investment (Fullwiley 2011; Moyo Okwaro and Geissler 2015), it is also a source of value in itself as an enactment of service, professionalism and action (e.g. Livingston 2012; Tousignant 2013b) constitutive of subjectivity and hence precondition for medical, or political, action. This also draws attention to the vital, but fragile, link between collaborative research and investments in health care capacity in Africa. Those who, because their bodies hold value for transnational science, are enrolled as subjects may gain access to a range of resources including but not limited to experimental therapies, especially when researchers take a broad view of what needs to be provided for both pragmatic and ethical reasons, as in the study described by Mika (see also e.g. Aellah and Geissler 2016; Ouvrier 2014). Capacity and incapacitation are thus linked together in processes of maintenance and loss, as well as of research and care.

While Mika is interested in what happens to capacity *after* capacity building, Claire Wendland seeks out the presence of capacities that capacity building does not address. She approaches capacity not as institutional memory, but through the accumulation of knowledge and skills by medical students and doctors in Malawi. What they learn, she points out, is much more than the specific abilities that capacity building initiatives seek to provide them with. They learn to anticipate and adapt to the partial and changing presence of material and human resources; to understand and relate to the conditions in which their patients live; and both to diagnose specific pathologies without expensive technologies and to identify the broader political determinants of the conditions they encounter. Acknowledging such capacity for 'political diagnosis' would, Wendland warns, open up to consideration the broader politics of transnational relations made up by capacity-building initiatives as well as trade relations and economic policies. It would also bring into focus African clinicians' judgments on needed capacity, in which technology, staff shortages, career pathways and relations of mutual learning and solidarity are more important than the skills on which most capacity-building initiatives focus, while also exposing the localness of presumed 'global' best practices.

Like Wendland, Damian Droney explores the decisions about political choices implicit in capacity building, and the potential for more explicit debate about which capacities to build.

The question of what kind of medicines and natural products research are needed in Ghana and West Africa – whether to evaluate whole plant preparations and herbal medicines, or to investigate the pharmaceutical effects of isolated molecules – has long been a topic of debate. The stakes of this choice are practical, but also political and symbolic, with implications for therapeutic self-sufficiency and regulation, as well as representations of distinctive African identities, knowledge and scientific sovereignty. By intervening in this longstanding debate, the provision of equipment and training for drug discovery research by a collaborative project funded by the Japanese International Cooperation Agency (JICA) were, he points out, far from neutral. Disrupting the history of orientation towards national science in a medicinal plant science institution, the JICA project also reoriented the Ghanaian researchers involved in capacity building towards ‘global’ scientific networks. This also emphasized hierarchies of scientific work within the research center, separating the value of ‘needs-based’ research from prospects for career mobility, and sharpening distinctions of both class and researcher status.

While Droney and Wendland show that supposedly ‘global’ standards of good science and care may not fully capture the capacities most relevant to African health practices and outcomes (albeit in ways that invite reflection on how to define capacity everywhere), Iruka Okeke’s paper argues that African and global bio-scientific capacity are tightly imbricated. The ‘genomics divide’, that is a growing gap between different regions’ participation in advanced biological research, exacerbates another gap – between basic research and the development of applications such as diagnostic tests, drugs and vaccines. Scientists in disease-endemic countries possess ‘capacities’ – knowledge that enables but also, importantly, gives value to, the application of genomic data to problems of public health – which may accelerate the production of such tools. Okeke makes a strong argument for the genuine participation of African scientists for the benefit not only of science and medicine in Africa, but to help fulfill the promise of genomic science for all. Such participation, however, is challenged not only by the small number of research collaborations, but also by the hierarchies implicit within them. There is a need to find new ways for African scientists to exercise authority, leadership and initiative in collaborative research (see also Okeke 2016).

Together, the papers in this special issue show that the stakes of health capacity in Africa are high and heterogeneous, and the challenges of making, keeping and deploying it are substantial. They approach capacity as relational, arising not only in negotiations and transactions between African and non-African experts, but also in materiality, in time, in techno-politics and geopolitics, in the cohesion and dissolution of collectives, in points of contact between labor and dreams. As such, the problem of capacity opens up crucial questions about the changing constraints and possibilities of medical and scientific work in Africa and elsewhere.

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Notes on contributors

P. Wenzel Geissler is Professor of Social Anthropology at the University of Oslo; his current research concerns the ethnography of medical research and scientific institutions in Africa.

Noémi Tousignant is an affiliate member of the Department of Social Studies of Medicine at McGill University and Guest Researcher in History at the Université de Montréal; she studies science as public service, toxicity, and pharmacists in West Africa.

Together, Tousignant and Geissler have worked on civic responsibility, history and memory, and more broadly relations between temporality and the material in African scientific sites. Together they have published several papers and a special issue of *Africa* (2013), and the co-authored volume (with Guillaume Lachenal and John Manton) *Traces of the Future – Archaeologies of Medical Science in Africa* (Intellect 2016).

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