

14.00-16.00	<p>PARALLEL SESSIONS</p> <p><u>Session 5 - Collaboration as Capacity.</u></p> <ul style="list-style-type: none"> • JC Holbrook (Western Cape): <i>NASSP: Building Astrophysics Capacity in Africa</i> • Ferdinand Okwaro (Cambridge): <i>Collaborations and Scientific Capacity Building in Africa</i> • Sheryl McCurdy (Texas): <i>Navigating Genomic Landscapes: H3Africa's Capacity Building Initiative and Informed Consent</i> • Lindsay Reynolds: <i>Building Community, Building Capacity? Possibility and Power in Global Health Research in South Africa</i> • Katherine Ripullone, Pontiano Kaleebu, and Manjinder Sandhu (Wellcome, Cambridge and MRC/UVRI): <i>The African Partnership for Chronic Disease Research (APCDR) Open Centre</i> <p>Chair: John Manton (Cambridge)</p> <p><u>Session 6 - Histories and Futures of Capacity.</u></p> <ul style="list-style-type: none"> • Melissa Graboyes (Oregon) <i>Capacity as Memory: The Experimental Science of Lymphatic Filariasis Elimination, Lamu Archipelago, 1920--2010</i> • Annette Skovsted Hansen (Aarhus): <i>From Technical Assistance to Scientific Capacity Development, 1947-2014</i> • Ruth Prince (Oslo and Cambridge): <i>From Russia with Love: Remains and Legacies of Soviet Medical Aid to Kenya</i> • David Kyaddondo (Makerere): <i>Capacity for what? Social Science Academic Training in Uganda</i> <p>Chair: Ferdinand Okwaro (Cambridge)</p>
16.00-16.30	Tea break
16.30-18.00	<p>PLENARY SESSION III</p> <ul style="list-style-type: none"> • Wapu Mulwafu (Malawi) • Peter Redfield (UNC-Chapel Hill): <i>Crisis, Capacity and the Scale of the Future</i> <p>Chair: Noémi Tousignant (Cambridge)</p>

PLENARY SESSION I: Needing Capacity.

Susan Reynolds Whyte (Copenhagen): *Here or There? Locating Health Research Capacity*

Enhancing research capacity through collaborations between universities in the global North and South is a well-established 'development' activity. In this presentation I consider the nature and locations of that capacity, using examples from my own engagement in such Danida-supported programmes over nearly 25 years in Uganda.

While Danida policy is that resources should go primarily to developing capacity in South universities, the programmes have provided valuable advantages to Danish institutions and researchers. As others have noted, the efforts to redress inequality between the North and South provide desirable opportunities for northern academics, who seek 'partnerships' and platforms for research. At the same time inequalities in opportunities, experience, training, formal qualifications, and

income are also reinforced in the African university. This has happened both here and there.

What kinds of capacity are strengthened where? First of all, research ability is enhanced in individual minds and biographies. A primary goal has been the training of African researchers at PhD level. They sharpened their ability to define research problems concerning social aspects of health; they improved their skills in assembling and analysing data; they were able to deepen their familiarity with relevant literature; they learned to write in the accepted genres. They thus improved their qualifications for promotion in their universities by gaining degrees and publications. They also acquired competence to work on other research projects and on consultancies and in development agencies.

Not only individuals but also their institutions gained. Having had one enhancement of research capacity project improved the prospects of getting more research projects, in the way that one project so often leads on to another. This was especially the case where research infrastructure also benefitted in terms of hardware (computers, vehicles, literature) and the necessary human software (administrative and accounting skills, training librarians and IT specialists).

Less obvious, but just as important, were the formation and extension of connections. The duration of collaboration meant the development of familiarity and even friendship between the Danish and Ugandan researchers. Exchanging visits, we came to know something of each others' conditions of work, style of interaction, and family life. We benefitted from each others' networks: the Danish scholars gained access to field assistants, informants, and key officials in ministries, health facilities, and NGOs in Uganda. The Ugandan scholars received invitations to participate in international conferences, affiliate with research institutions in Europe, and join other research projects.

Capacity for what purpose? Most of our Ugandan colleagues have gone back to teaching at their home universities. They are training the next generation of those who will man the ministries, district offices, and NGOs. Some have moved to positions of considerable responsibility, where they make decisions of institutional, social and political consequence. They take on consultancy studies when they are unable to move on to another foreign-funded research programme. Their training should equip them to undertake these tasks in a more independent, well-founded and critical way. The question is whether the situations in which they work allow them to exercise their enhanced capacities.

Julie Livingston (Rutgers): *Interstitial Capacity in a Vertical World, and the Problem of Co-infection*

In Botswana simultaneous epidemics of tuberculosis, HIV, and cancer are deeply entangled and fueling one another. This situation is creating great challenges and confusion for both patients and their clinicians. They are seeking diagnosis and treatment in a health system whose institutional and intellectual architecture continually separates each disease category even as these diseases continually clot back together or aggregate in the human body and in daily life. This paper, examines the problem of co-infection as it arises in Botswana's cancer ward, in an attempt to understand how comorbidities challenge African health systems, built as they are through vertical programs and layered histories of epidemic disease.

PLENARY SESSION II: Opening Up Capacity.

Iruka Okkeke (Haverford College): *African biomedical scientists and the promises of 'big science'*

Biology is in the throes of a genomic revolution that has exponentially increased the rate and possibilities for discovery, but widened the gap between the skill sets of most African biologists and those of their contemporaries elsewhere. Genomic and post-genomic research requires large financial investments and collaboration among large numbers of specialists. In return, it promises tangible outcomes, which for infectious disease genomics are often focused on Africa's infectious disease burden. Multiuser genomic data are generated at very few centers worldwide and include pathogens, vectors and hosts of tropical infectious diseases. Application of these data to health problems requires participation of and leadership from scientists with familiarity and access to the relevant diseases and the patients that suffer them. This is occurring for some Africa-endemic diseases but not for many others. I outline some of the challenges African scientists face in collaborative initiatives that use, or could use, genome-level data. I argue that the arrival of next-generation diagnostics, surveillance tools, drugs and vaccines could be accelerated by improving the nature and the degree of participation of African scientists in genomic and post-genomic inquiry.

Claire Wendland (Wisconsin): *What's in that black box? Looking for a more capacious version of capacity*

Many visions of capacity building construe the goal as rendering African laboratories, doctors, scientists and universities indistinguishable from their counterparts in wealthier nations. The specificities, histories, peculiarities or inner workings of African institutions and individuals are black-boxed: no one needs to know about them. Where difference is evident, it is taken as a marker of inadequacy. I draw on research at Malawi's College of Medicine and the work of other social scientists and historians to sketch out a more capacious model of capacity: one in which capacity building is grounded in specificity, is flexible and innovative, and involves as much learning as teaching.

PLENARY SESSION III : Capacity and Incapacity

Wapu Mulwafu (University of Malawi): *Building scientific capacity on soil conservation in colonial Malawi*

Scientific ideas have been and continue to be critical in shaping policies and practices in Africa. In this discussion, we use the discourse of soil degradation as a lens through which to understand the kind of scientific capacity colonial states built to promote soil conservation in Africa. Scientific ideas produced in institutions of higher learning in Europe were experimented, re-fashioned and implemented in colonial societies with little regard to local systems of knowledge. Capacity entailed training and, in some cases, persuading African people to be able to adopt western scientific ideas. In British colonial Malawi, as was the case elsewhere, the narrative of environmental degradation was quite dominant. It was supposedly based on scientific knowledge of the time which even necessitated state intervention. When the Dust Bowl occurred in the 1930s, an opportune time had come for action to be taken. Ideologically, state intervention became defensible and there was a continuous flow of information from the community of scientists in all parts of the world to justify the formulation of policies and strategies in African societies. State intervention shaped colonial relations, and altered meanings over environmental control and rural ecological change right up to the end of the colonial era. Local knowledge systems which sustained African production systems further complicate matters of the narrative of conservation which was a contested terrain and one deeply embedded in colonial power relations and scientific ethos. Scientific ideas and practices were viewed as the answer to the perceived problems of ecological degradation in Malawi. The state paid little attention to the labour required of peasants and the systems of land use which they were supposed to abandon in favour of western ones.

Peter Redfield (UNC - Chapel Hill): *Crisis, Capacity and the Scale of the Future*

I approach capacity from the vantage point of a rival trope in African experiences of science, technology and medicine: crisis. Whereas "capacity" speaks to some sense of future action and a progressive trajectory, crisis emphasizes the present and immediate needs. This is particularly true for humanitarian forms of international aid, which emphasize a medical logic of emergency as well as a moral imperative to respond to suffering and save lives. Drawing both on the example of the medical organization Médecins Sans Frontières/Doctors Without Borders and on a wider, heterogeneous array of small technologies produced in the name of humanitarian design, I connect crisis and capacity to questions of infrastructure and the material framework for action. What set of background systems might a term like capacity presume? To what extent do they in turn expect an expanding grid of services guaranteed by a state? Technologies designed for perceived conditions of crisis, by contrast, assume little in the way of immediate infrastructure, relying instead on a combination of mobility and minimalist materials. When placed in relation to the classic landscape of development they suggest a smaller future, cast on a less certain social scale.

PARALLEL SESSION I: "Including People Well?" Capacity on Unequal Terrains

Susan Craddock (University of Minnesota) *The Science of Inequality: contours and limits of capacity building in South African tuberculosis clinical trials*

This paper argues that scientific requirements of knowledge production and dissemination dictate contradictory relations between inequality and capacity building as exemplified by Aeras, a nonprofit organization focused on development of tuberculosis vaccines, and its clinical trial collaborators, the South African Tuberculosis Vaccines Initiative (SATVI). Aeras has vowed to make successful new vaccines available and affordable to all who need them, a mission based on the Gates Foundation-driven variant of medical humanitarianism by mitigating global infectious disease burdens through the power

of science and technology. As such, Aeras has made strenuous efforts to make trials of their vaccine candidates as equitable as possible, while also joining their local partners in numerous community engagement and capacity building endeavors. At one of Aeras's main sites outside of Cape Town, South Africa, for example, SATVI members created educational outreach materials explaining tuberculosis and the need for a new vaccine; organized and liaised with a Community Advisory Board to channel communications between community members and trial investigators; and even bought computers to put in local school classrooms. Specific to clinical trials, SATVI and Aeras fine-tuned informed consent forms; designed epidemiology and biostatistics training modules for everyone involved in the trials including cleaners and drivers; trained recruitment volunteers; and formed quality control units to monitor informed consent processes. Taken together, these efforts illustrate what Cori Hayden (2007) describes as a changing representational politics of clinical trials in the biosciences from resource extraction to 'giving back,' of 'including people well' (from Marilyn Strathern) in a research process characterized by the language of exchange and benefit sharing (733). And to a certain extent this has happened. There is even explicit acknowledgment of the inequalities underpinning relations between trial participants and investigators (cf Geissler 2013) given the nature of these trials and the larger missions of the organizations behind them. But here, efforts to intervene in a preventable disease collide with the fact that producing the scientific knowledge necessary to effective biotechnical intervention requires poverty and its attendant disease vulnerability among trial participants. It also highlights the limits of biotechnical intervention as an instrument of capacity building when this happens within ecologies of chronic underemployment, hunger, and need. Requirements of scientific harmonization such as Good Clinical Practices as well as publishing protocol, furthermore, prevent potential trial participants from helping design clinical trials more attuned to local contingencies, and that they do not even find out the results of the trials for which they volunteered their own or their infants' bodies before these results are shared with stakeholders and published in academic journals. Finally, the ability of local scientists at trial sites across Africa to communicate issues and data results with each other is sacrificed to the primacy of each site communicating these to Aeras. Utilizing interviews, conversations, and international conference presentations, I argue that these requirements of biomedical knowledge formation and circulation ironically impede abilities to include participants well – that is, to turn research participants into participants in the research process and the possibilities this might suggest for broader capacity building.

Wenda K. Bauchspies (ICRISAT): Gender and Scientific Capacity: Dryland Cereals in Mali

At the conclusion of a project on the biodiversity of sorghum and millet in Mali a researcher mentioned one of the six negative results as being “ambitions scientifiques trop élevées par rapport aux moyens humains et financiers.” Or the scientific ambitions of the project were higher than the human and financial capacity. Various scientific disciplines were represented in the project including breeders, agronomist, economists, geographers and plant geneticist from Mali, Burkino Faso, Niger, France, Germany and Netherlands. As a newly hired gender specialist charged with the task of building gender analysis into the scientific capacity of research for development on dryland cereals in West and Central Africa this statement about scientific ambition versus existing scientific capacity caught my attention. The proposed paper will engage with the following two questions: (1) What ambitions are shaping scientific capacity in Africa and how? (2) What capacity is being developed/or do we want developed as scientific capacity?

Funders such a Bill and Melinda Gates Foundation, USAID or World Bank are requiring that there is a gender component in scientific research for development. Amongst funders “gender” has become normalized. It is one of the main evaluation criteria to determine the worthiness or fundability of the proposal. The funders' ambition for scientific research is that it will impact the lives of men and women equally while bringing the marginalized into equal standing with the mainstream.

This paper will use CGIAR Research Program on Dryland Cereals and its activities in Africa to begin to respond, explore and address the following question:

How do we develop the capacity for science to integrate gender into the design, activities and implantation of science in Africa, when we are still struggling to develop scientific capacity that meets scientific ambitions?

The paper will employ discourse analysis of research materials and global funder's guidelines in conjunction with auto-ethnography and participant observation as the author designs a social science agenda focused on gender for the

International Crops Research Institute of the Semi-Arid Tropics. By focusing on the research past and present of Dryland Cereals in West and Central Africa, the paper will explore the relationship between ambitions and capacity in a 40 year old scientific research center based in Sub-Saharan Africa. The paper will address how/what “ambition” shaped the capacity building and transfer of research on dryland cereals in Africa into its present form. In particular the focus on “gender” as an ambition for scientific capacity is a unique opportunity to explore how “capacity” is changing in an African scientific context and what this might mean for capacity, science and research for development. Additionally the focus on gender will help identify common ground between science, social science and humanities for “capacity development”.

Freda Nkirote (Kenya National Museum): Fees-Based Scientific Capacities

Kenya like any other developing economy has many challenges in making its scientific capacities. This paper examines the central role of fees for education in shaping the possibilities of capacity. Fees underlie a complex interaction between means, intelligence, ambition, standards and access to jobs and education that constrain the development of scientific talent. I examine this interaction at three sites: in the transitions from primary to higher education, in graduate science studies and in employment in transnational research projects.

Due to low economic income per capita, and a public education system that does not allow for the early development of scientific talents the scientific capacities have remained poor. In recognition of this fact). The Kenyan government has made concerted efforts to provide ‘free’ primary and secondary education. The benefits of these efforts are yet to be realized since basic education is still unattainable to many Kenyan people. In addition, the competitiveness of the grading system favours those children who are able to join expensive private schools, which are equipped with best education facilities, leaving the poor in overcrowded and ill fitted learning facilities. At the higher institutions of learning, the pass mark (cluster points) for science subjects is very high, meaning that, these subjects are accessible only to the perceived ‘smartest’ who get government scholarships, and the elite who can afford to pay high fees, which is charged to the ‘less smart’ students. This has effectively limited the acquisition of scientific capacities to the elite, and the ‘smartest’ leaving the majority who do not have a chance to good education as drop outs or students of art subjects whose fees and cluster entry points are lower.

Similarly, many students pursue graduate studies to enhance their careers, but in order to obtain funding, they are often forced to carry out research that is shaped by the interests of their funders. Students who cannot afford to pay for their tuition, field research, and upkeep while undertaking graduate studies tend to attach themselves to well established researchers – either successful local participants in international collaboration, or international researchers based in Northern institutions – who might have grants with a training component. While this plays a major role in making scientific capacities and career development, the student may end up pursuing research that they had not envisaged, hence killing his/her aspirations and ability to contribute to scientific issues that interest them.

PARALLEL SESSION 2: Decolonizing Capacity? Developmental Legacies in Research and Training

Sabine Clarke (University of York): *Scientific research and the problem of communicating knowledge in the late colonial period*

The use of categories such as ‘basic science’, ‘applied science’ and ‘innovation’ and the construction of relationships between these categories suggests that organising science to achieve economic or social goals can be construed as a rational process. During the late colonial period a large number of new institutions were created across the British Colonial Empire to undertake scientific research. The work in these institutions was often described as fundamental research and it was claimed that this work would be the basis of planned development. This paper will show that in practice a range of non-technical factors were important in determining the utility of the work that was done in these establishments. Research enjoyed a higher status than other technical and medical activities and it was done by scientific specialists such as biochemists or parasitologists who often had postgraduate experience in elite universities. These individuals did not necessarily have close working relationships with doctors, vets or agricultural instructors in the colonies and the professional distance between different groups of technical staff was exacerbated with the creation of new laboratories that meant that researchers worked in separate locations without oversight by the existing technical departments. Taken

together, differences in status and disciplinary affiliation, and the importance attached to freedom for scientific researchers could mitigate against the easy circulation of knowledge between those that researched and those concerned with creating and implementing development projects. Whilst networks existed, they were often determined by disciplinary background and qualifications that determined the journals people published in and the conferences they attended. The communication of the results of scientific work might be achieved more readily amongst entomologists for example, at the regional, or international level, than between entomologists and other scientists or medical staff at the level of the colony. The question “How does knowledge travel?” is an important one and this historical example suggests that policy to build scientific capacity might need to consider sociological factors when it comes to the issue of communicating new knowledge to those that might use it.

Tim Livsey (Birkbeck): *The colonial-era university: an experiment in capacity building*

This paper takes the University of Ibadan, Nigeria, as a case study of colonial-era capacity building in Africa. During the Second World War a new network of British colonial universities was planned. They were envisaged as engaging in a particular form of capacity building related to parallel projects of decolonisation and development. The paper argues that conceptions of academic capacity were deeply rooted in the development worldview of this era: a cosmopolitan, universalist vision of progress that declined during the 1960s. Nevertheless, the university’s contribution to development was also intensely debated in Nigeria and abroad.

The paper traces changing thinking on the university’s role in capacity building by examining three key stages: the planning of the University of Ibadan during the 1940s, its ‘magical years’ of the late 1950s and early 1960s, and the crises of the mid-1960s. The planning of the university brought together conceptions of capacity with markedly differing roots. Nigerian and other West African visions of higher education, inflected by colonial politics and elite identities, had a significant impact on the deliberations of the 1944 to 1945 Commission on Higher Education in West Africa. These ideas were combined with those of wartime British technocratic planners with a tendency towards the utopian to create a distinctive vision of the university’s role in capacity building.

During Ibadan’s ‘magical years’, the university was widely seen as a development project which would transform Nigerian society and deserved high levels of investment. The university’s buildings, staff, books and equipment were seen to symbolise its growing capacity, as were transnational flows of funds, people and objects. The United States as well as Britain assisted the university, seeing it as central to Nigerian development. It was at times criticised in the Nigerian press, but often for not going far enough in creating new departments considered essential to national development. Ibadan offered the template for a new generation of Nigerian universities, and indeed universities generally were celebrated as engines of African development, for example at the 1962 UNESCO conference in Tananarive.

Nevertheless, by the mid-1960s the university’s capacity building credentials were being questioned at Ibadan and elsewhere. A crisis in the development worldview was produced by a concatenation of local crises and wider unease about high technology development models. In Nigeria, the university came to be seen as producing enviable lifestyles for its staff and students without a commensurate contribution to national development. Military governments seeking fuller decolonisation saw Ibadan as a centre of British and American influence. For their part, British and American donors became disenchanted with university-educated African elites, turning instead to agricultural and basic level technology forms of development.

Conceptions of academic capacity were therefore deeply rooted in local and transnational political, social, economic and ideological contexts. In particular, academic capacity was understood in the light of changing conceptions of development.

Casper Andersen: *Capacity building and the establishment of UNESCO’s science and technology agenda for Africa*

As the colonial period drew to a close international organizations with mandates in science and technology scrambled to obtain a stake in the development agenda for independent Africa. For The United Nations Educational, Scientific and Cultural Organization (UNESCO) decolonization presented an opportunity to take stock of the diverse – but in most cases miniscule – institutional infrastructure for science left by the colonial powers in Africa and to launch a number of initiatives

aiming to promote what we today would label scientific capacity building. These initiatives included the formulation and adoption in 1964 of the ambitious “Lagos Plan” for scientific research and training in Africa and the establishment in 1965 in Nairobi of UNESCO’s Regional Office for Science and Technology in Africa (ROSTA) headed by the influential ecologist Alain Gilles.

There were two notable characteristics of UNESCO’s early science initiatives in Africa. Firstly, UNESCO officials and experts were dismissive of what they regarded as a one-sided focus on technology transfer. They argued that the development of the “human resources” in Africa was the main concern and therefore insisted that the training and education of African scientists and technologists on all levels should be the top priority in development efforts. This was needed in order to advance social and economic development but also regarded as the key to obtaining “scientific independence” to match the recently obtained political independence. While the idea of science as the driver of economic development had been shared by post-war colonial development states in Africa, the idea of creating scientific independence clearly had not. It was also an agenda to place science in the service of nation building that sat uneasily with UNESCO’s ideological commitment to promoting scientific internationalism.

The second characteristic of UNESCO’s early science initiatives in Africa was a continuous and strong commitment to building capacity in the ecological sciences, particularly in relation to the conservation of natural resources. The focus on promoting scientific conservation practices meant that UNESCO’s agenda clashed with those of other UN organizations (particularly the Economic Commission for Africa) as well as with officials in the new African UNESCO member states who tended to place greater emphasis on the need for scientific training relevant to industrialization and modernization efforts.

In this paper I analyze UNESCO’s early science agenda for Africa with a specific focus on how the tensions between a) national independence vs. international collaboration and b) conservation vs modernization influenced UNESCO’s practices and ideas relating to capacity building. Based on extensive archival research at UNESCO’s Headquarters I identify how these tensions shaped some of the projects that made it beyond the planning stage. Moreover, drawing on the surprisingly frank (unpublished) UNESCO Field Mission Reports and Country Reports I present some of the main criticisms that were raised against UNESCO’s science capacity building initiatives and discuss the extent to which these early experiences and criticisms filtered into later UNESCO programs, including CASTAFRICA and beyond. The paper thus addresses the questions raised in Point 2 in the workshop CFP.

PARALLEL SESSION 3: Out of Sync? Losing Capacity.

Branwyn Poleykett, Cambridge - Capacity and Critique: losing capacity in Uganda’s NTD control programmes

Anthropology has produced rich accounts of the acquisition of skills as a complex process through which people experience, question, and assert their place in the world. Equally important, however, is the opposite process: the loss of skills and capacities which accompanies social, technological and economic change.

Based on interviews with scientists in Uganda studying schistosomiasis and onchocerciasis this paper explores the shift from tropical into “neglected” diseases; a change which has altered the everyday scientific practice and the knowledge politics of public health intervention. As the power of the field as a space of exploration, contestation and authorisation has been diminished and new technologies have been deployed Ugandan scientists have seen their work become more routinized, less autonomous and less creative, making it difficult for them to secure and assert the local scientific and social value of their labour and to shape the programmes in which they work.

This paper follows African scientists as they attempt to keep open fraught political questions about disease control and eradication. These scientists live with and query the fluctuating indices produced by the monitoring of NTDs; calculations which mobilise an idea of debility shaped not just by the experiences of vulnerable bodies but also by complex imaginations of poverty, market participation and socio-economic fitness. Ugandan scientists blend the political and epistemic, the pragmatic and the philosophical, in their critique of public health programmes and draw acute contrasts between their scientific skill and their attenuated capacity for effective political action. I will argue that their stories can guide us towards new ways of producing collaborative, responsible and effective cultural critiques of global health.

Damian Droney (Stanford University): *Introducing Absence: Modernity and its Lack in a Ghanaian Laboratory*

Ghana's Center for Scientific Research into Plant Medicine was founded in the 1970s as a symbol of the robust presence of an African modernity. As a research center applying biomedical research to indigenous medical knowledge, it promised a reevaluation of research priorities in postcolonial Africa and a coming of age of African science. Today, however, the young researchers at the Center describe it as a symbol of African lack in relation to an imagined global modernity. As a counter-discourse to the Afro-optimism that surrounded them, researchers introducing various visitors to the research center pointed to broken equipment, unreliable infrastructure, and the absence of specific technologies as the salient features of the laboratories. Lab workers told me that their workplace was "not a modern lab," and pointed out the sources of their disappointments. Efforts to improvise with locally available materials were presented as embarrassingly out of step with the state of science elsewhere, and Ghanaian scientists laughed at the peculiarities of laboratory work in their country. Even laboratory animals were lamented as not quite right. This is the kind of talk that Achille Mbembe calls "negative interpretation," where African social life is described through what it is not, and interpreted as a poor copy of, or marking the absence of, modernity as it should be. The idea of Africa as synonymous with lack is not just a feature of an orientalist discourse in Europe or North America, but in fact structures the experience of social life for many Africans themselves. This negative interpretation was a normal part of daily experience at the Center, but was always expressed in an offhand manner.

I examine these casual comments and asides to consider what they might mean for the researchers, students, and laboratory workers who express them. While by all accounts the Centre has greatly professionalized and increased its research capacity since the 1970s, it has gone from a point of pride to a reminder of global inequality. I argue that the ironic growth in disappointment that has accompanied the building of research capacity at this institution serves to make moral claims about material and social inequality, reinvigorating a progressive narrative of African emergence. When employees of the Centre pointed out the lack of specific machines, or maligned the malfunctioning infrastructure and said that it was "not modern," they were measuring their surroundings, at times explicitly, by the promises and aspirations of the 1950s and 1960s. Judged by the expectations of that period, their workplace has come up short.

Marissa Mika (University of Pennsylvania): *Cobalt Blues: Radiotherapy Technopolitics in Uganda*

On any given morning in the radiotherapy bunker at Mulago National Referral Hospital in Kampala, Uganda, 80 to 100 patients line up for radiotherapy, or being "roasted," as it is known in Luganda. The services at Mulago rely on a Chinese manufactured Cobalt-60 machine, donated in the early 1990s with help from the International Association of Atomic Energy (IAEA). The machine frequently breaks, and uses an expired cobalt source whose half-life passed sometime in the mid 2000s. The Ugandan physician-scientists who have been trained from Cape to Cairo in radiation oncology feel that it is their moral and medical obligation to continue to run the unit, and do so by upping radiation doses and exposure times. They are unable to assess to what extent longer exposure times simply harm and burn rather than heal or alleviate suffering. And so, women rotting and bleeding from the inside out from cervical cancer, or men with bone cancer, or children with Hodgkin's disease still spend time under the "roasting" machine, with the hopes that it can provide palliative relief and shrink tumors.

The situation in Uganda is not necessarily unique. 20 years ago, the IAEA strategically planted refurbished Cobalt-60 radiotherapy machines across the Global South. Radiotherapists, such as the charming and driven Dr. K in Uganda, were trained as part of a comprehensive effort to provide a cost-effective solution to increasing national capacity for treating cancer. In the 1990s, Cobalt-60 machines also came along with technicians, service contracts, and provisions for continuing source procurement.

But in the intervening decades, Cobalt-60 went out of fashion. Most radiotherapy services in the Global North now use linear accelerators. There are only a few manufacturers of Cobalt-60 left on the planet. This, combined with the fact that most shipping companies refuse to transport Cobalt-60 either by land, air, or sea after the terrorist attacks of 9/11 make it extremely difficult to either procure or mobilize a new Cobalt-60 source. And, just as the Cobalt 60 at Mulago loses its potency, so do the longstanding, but increasingly older contacts that Dr. K has from the IAEA to help smooth out the

problems of new source procurement.

This paper examines the historical and contemporary fall-out of radiotherapy capacity building in Uganda. I explain why and how Mulago National Referral Hospital's radiotherapy machine operates with an expired radioactive source. Focusing on the last 20 years of radiotherapy's history in Uganda, I discuss: (1) the rise and fall of the Cobalt-60 machine as the preferred radiotherapy machine for cancers in the Global South; (2) the creation and labor of radiotherapy expertise in Uganda in medicine and politics; and (3) the uncertain efficacy of radiotherapy treatments. I show how the historically situated techno-politics of a one-time radiotherapy donation continue to shape the ethical and practical realities of cancer care today in one corner of the Global South.

PARALLEL SESSION 4: Molecules of Capacity: Industry, Pharmaceuticals and Public Health

Mathieu Quet (IRD): *The capacity of what? Pharmaceutical economy in Kenya*

The Kenyan pharmaceutical industry has been growing since the mid-1970s. It is today the biggest in East Africa and one of the most dynamic in sub-Saharan Africa, with 42 registered local manufacturers registered by the Kenya Pharmacy and Poisons Board. More and more Kenyan firms sell their products at a regional scale and some of them even have set up their own Research and Development (R&D) labs. However, the pharmaceutical market is still loosely regulated and manufacturers as well as wholesalers and retailers keep on facing difficulties to ensure the production and distribution of quality medicines to the population. The answer to this issue is by no means simple and involves thinking simultaneously the industrial, legal, medical dimensions of drugs.

In this intervention, I will therefore put the notion of capacity into question through the analysis of the Kenyan pharmaceutical capacity building since the 1970s. In a first part I will set up the historical context of the emergence of a Kenyan pharmaceutical industry in the 1970s and 1980s. Then I will show the multiple quality issues met by this industry since the 1980s, from a technological, logistical and legal point of view. I will discuss the notions of "capacity" and "quality" in the pharmaceutical field as they are connected to multiple kinds of knowledge and techno-legal infrastructures. Part of the problem lies in the contradictory understandings of "capacity" by social actors – the notion has different implications if it applies to production, distribution, legal or medical regulation. At last, I will insist on the complex entanglements between law, technology, industry, security devices through which "pharmaceutical capacity" is produced.

This intervention is based on a fieldwork study of the pharmaceutical sector in Kenya I have been involved in since 2012, interviewing people involved in the manufacture, distribution and regulation of drugs (about 55 interviews) and studying written documentation. The focus of my research has been upon quality of medicines and regulatory standards. The approach is STS oriented, mixing socio-anthropology of science and medicine and communication studies.

Anne Pollock (Georgia Tech): *Creating Capacity for Pharmaceutical Knowledge Production in South Africa: Local Contexts and Global Networks*

Pharmaceuticals have long travelled the globe, but pharmaceutical knowledge-making has been concentrated in just a few places. Relatedly, Africa has long been an obvious place for thinking about global health, but it has rarely been considered as a site of global pharmaceutical science. What if Africa were to become a place of not just raw materials and end users, but of the science of pharmaceutical knowledge-making?

This paper draws from ethnographic research at iThemba Pharmaceuticals, a small South African startup pharmaceutical company with an elite international scientific board, which was founded with the mission of drug discovery for TB, HIV, and malaria. For its founders, the company was envisioned as a complement to academic exchanges, a way to contribute to scientific capacity in Africa in a manner that that would not contribute to brain drain. This particular company provides an entry point for exploring how the location of the scientific knowledge component of pharmaceuticals – rather than their production, licensing, or distribution – matters. I explore why it matters for the scientists involved, and why it matters for broader publics interested in global health and scientific capacity in Africa. In addition to fieldwork in Johannesburg, I trace the global scientific networks of this company, especially in the US and the UK. I show that this effort to create scientists for South Africa is both a local project and a global one, emerging both from a context of a particular postcolonial, post-apartheid historical location, and from cosmopolitan networks intertwined with big pharma, academic

science, and intellectual property regimes.

South African drug discovery is situated in a very particular historical and political context: South Africa is a relatively young democracy, in the midst of diversifying its economy from an extraction economy to a knowledge economy, deeply affected by AIDS and tuberculosis, resource-poor by global standards but highly-developed by African standards such that it plays an important role in training scientists for the rest of the continent. And yet the work of drug discovery scientists in South Africa is also cosmopolitan to its core. The organic synthesis methods there are indistinguishable from what might be done in well-equipped labs anywhere else, and the work is informed by a network of advisors comprised of global experts. Pharmaceutical knowledge production in South Africa is both postcolonial and global, and scientists involved in drug discovery there speak of it both as offering “African solutions for African problems” and as a way for African scientists to participate in the global networks of innovative science. Consideration of this case illuminates the limitations of global health frameworks that implicitly posit the global north as the unique site of knowledge production, and thus as the source of unidirectional knowledge flows from north to south. It also provides a concrete example for consideration of the contexts and practices of postcolonial science, its constraints and its promise. I argue that although this South African company’s efforts cannot be extricated from global flows of pharmaceutical knowledge-making, it still matters who makes knowledge and where.

Janice Graham (Dalhousie): *Building Capacity for Vaccine Safety in sub Saharan Africa*

In 2010, the Global Vaccine Safety Blueprint (GVSF) Project was launched to develop a standard approach for building global capacity for vaccine safety assessment and response. In the decade preceding the GVSF initiative, the Gates Foundation provided a \$70 million seed grant for the WHO Program in Appropriate Technologies (PATH) Meningitis Vaccine Project to develop a conjugate meningococcal A vaccine in sub Saharan Africa. Building capacity and capabilities for detecting, reporting and responding to adverse events following immunization (AEFI), and for ongoing surveillance and treatment given the potential of serogroup replacement with a new vaccine, requires sustained economic and political support beyond vaccine development and technical infrastructure. Yet, lack of health infrastructure, human resources, information technologies for stable communications and data exchange, and persistent fear of reporting AEFIs due to insufficient training and insecure employment underlies a perceived lack of political will for vaccine pharmacovigilance specifically and health care in general. Drawing from longitudinal fieldwork among multilateral actors involved with the making, regulation, implementation and receipt of the conjugate meningococcal A vaccine, MenAfriVac™ for sub Saharan Africa, this paper locates and describes logics of public health care during and after a decade of vaccine pharmacovigilance capacity building for MenAfriVac in Burkina Faso. In the spirit of social justice, equity and collaboration, a multilateral assemblage of scientists, clinicians, donors, governments, vaccine manufacturers and their brokers determined the vaccine’s need, development and implementation. Each participant had their own interest that together spanned a spectrum of public-private partnerships. Capacity building success narratives manifested by such partnered initiatives in collaboratory capitalism are seen to be influenced by an ideology of achieving and evaluating previously established outcomes that may have less relevance for what’s actually important on the ground.

PARALLEL SESSION 5 - Collaboration as Capacity

Ferdinand Okwaro (University of Cambridge): *Collaborations and scientific capacity building in Africa*

The conduct of scientific research depends on the possession of a minimum capacity in terms of staff research units, equipment, money, management and governance systems, and practices needed to compete effectively at an international level in a given research area. From the colonial times the building of scientific research capacity in Africa - scientific skills and human resource capacity, research management and governance and physical infrastructure - has involved the transfer of resources from the so called ‘North’ to the ‘South’ through a variety of models and pathways. These mechanisms have evolved, although with overlaps, from technical and technological assistance, overseas training, institution building, institutional twinning, and finally to ‘collaborative’ partnerships. As many African governments have, since 1980s become increasingly unable to or unwilling to provide funding for health related scientific research, collaborations have become the only way to access funding for research for many African institutions and scientists. Collaborations is however not a singular straightforward framework but rather an encompassing and innovative social

concept that is constructed, evolves and takes various shapes depending on the contexts and groups involved. It encompasses different fluid and unstable models. In one model of collaboration, a single northern partner makes massive investments to purchase and maintain costly, rapidly changing world standard equipment within a local host site, and often end up as a gatekeeper, controlling all future collaborations. In yet another model, local research institutions, initially existing independently or emerging from an initial massive investment by one collaborator, engage several collaborators partly because their main funder was not providing ever expanding collaborative support. In this latter model, collaborations entail continuous and creative work around maintaining the partnership with the initial funder while at the same time attracting new collaborators. To maintain their status as viable research entities, entrepreneurial scientists increase the number and diversity of collaborators to shield themselves from control by one collaborator while making optimal use of very diverse opportunities - maximising scientific possibilities and gain - and use different collaborators in a complementary fashion, creating scientific capacity from different bits and pieces. The necessity for continuous support is compounded by an ever accelerating turnover of technical apparatus and methodological innovation which creates new forms of demands and accompanying dependencies. This paper, based on ethnography in an institution practising this latter form of collaboration, explores and unravels the intricacies, strategies and processes involved in health research capacity building in Africa sharing the perceptions and strategies adopted by African researchers on the basis of their wide experiences and contextual knowledge.

Sheryl McCurdy (University of Texas): *Navigating Genomic Landscapes: H3Africa's Capacity Building Initiative and Informed Consent*

Building genomic capacity on the continent is a central tenet of the NIH and Wellcome Institute-funded project on human health and heredity (H3Africa). Capacity building is a multi-faceted effort in this interdisciplinary initiative to ensure African research teams develop the skills and networks necessary to independently conduct their own research, retain DNA samples at their home institutions, and analyze genomic data locally. Training needs range from developing the capacity of local technicians to maintain freezers for sample storage to engaging national leaders on Institutional Review Boards (IRBs) about genomics and the informed consent process. Scientists from the African Society of Human Genetics who initiated this endeavor in 2007, along with others now funded by the H3Africa initiative, grapple with these training issues as they work on 22 genomic projects spread across 21 countries.

The H3Africa Consortium, which includes those funded by H3Africa projects, the NIH and the Wellcome Institute, created different working groups to manage core issues related to the function of the consortium. These seven working groups focus on various aspects of capacity-building: 1) Biorepository, 2) Data Sharing, 3) Genome Analysis (Cardiovascular, DBAC, and Custom Chip subgroups), 4) Ethics and Regulatory Issues (Community Engagement subgroup), 5) Publications and Marker Paper, 6) Outreach and Communication, and 7) Education and Coordinated Training. The working groups interact as needed and communicate with H3Bionet on related issues. Formal discussions take place bimonthly by phone and at H3Africa Consortium meetings on the continent semiannually.

The NIH and the Wellcome Institute fund their own H3Africa projects and each has its own set of rules and regulations. The grant recipients, in addition to navigating funder's expectations, must operate within parameters set by their local institutions, national IRBs, and local communities as they implement their projects. Multiple interpretations of how to manage the projects exist as each set of actors negotiate the new terrain.

The current focus of the Ethics and Regulatory Issues Working Group is on working with national IRB representatives about understandings of genomics and informed consent. For example, who decides whether study participants go through a broad or tiered consent process? Is it the funding agency, the local IRB, or the local community? How do we develop the capacity to have meaningful conversations at each level? As we develop our ability to communicate about genomics, how do we ensure people provide meaningful informed consent? Is it really possible to give informed consent in settings where participants have great need and worry about their access to health care?

The Ethics and Regulatory Working Group's current project to build capacity is through engaging in a one-day intensive workshop with national IRB representatives in a closed meeting following the next H3Africa Consortium meeting and will

be held in Stellenbosch on June 2nd. Issues surrounding IRB regulations and how to obtain informed consent cut across projects, funders, and working groups. This paper examines the ways influential actors in and outside of H3Africa conceptualize, understand, and negotiate this process as they work to build local capacity.

Lindsay Reynolds: *Building community, building capacity? Possibility and power in global health research in South Africa*

Drawing on ethnographic research conducted at one site of long-term biomedical research and intervention, the proposed paper aims to explore tensions and synergies between imperatives and narratives of 'capacity building' and 'community engagement' in global health research. More specifically, the paper will examine how concepts of 'capacity' and 'community' are deployed in the activities of a large-scale demographic and health surveillance and research centre in northern KwaZulu-Natal, South Africa.

In this region, where my research has been based for the last decade, nearly every family has been affected by both the long-term social consequences of the HIV epidemic and by the ongoing research activities of this major transnational research programme formed to measure and address its effects. Since 2000, the research centre has conducted semi-annual rounds of demographic and health surveillance on a population of approximately 11,000 households. Further, like many other demographic and health surveillance sites in Africa, the centre has served as the site for a variety of clinical trials and other health research projects and a diverse array of internationally funded intervention programs. Behind these technologies of research and surveillance lie a massive amount of physical and emotional labour, shaped by a complex constellation of patronage, obligation, generosity, and debt.

In this context, the paper asks, what kinds of figures and figurations of politics, of the social and of the local are produced through processes of capacity building and community engagement? How do they articulate with longer histories of production and extraction—of physical labour, raw materials, and scientific data—in this locality? How do contemporary forms of capacity building and community engagement rely on, reproduce or reinvent structures of power and patronage? How do they transcend them? Whose capacity, in other words, is built, and toward what ends?

Capacity building, the paper suggests, though sometimes articulated simply as one element of the research centre's broader strategy of 'community engagement' and sometimes dismissed offhand, in fact serves to produce a field of relations that make the conduct of such research continually possible. Possibility in this sense operates across two registers: the first, an instrumental and practical concern with participation, consent and 'community buy-in' and the second, a broader set of norms regarding what is seen to constitute ethical and just research in the postcolony. The paper explores the tensions that arise between actions across these sometimes quite different registers in order to raise concerns regarding the structures of power and politics that often underpin capacity-building initiatives in such localities.

JC Holbrook (University of Western Cape): *NASSP: Building Astrophysics Capacity in Africa*

The Astronomy Geographic Advantage Act of 2007 (Creamer 2008, Ngcobo 2011) is one aspect of the South African government's commitment to supporting astrophysics and the building of international observatories. Another is the 541 Million ZAR (~50 Million USD) allocated to Astrophysics and Space Sciences each year by the South African Parliament (National Research Foundation 2012). South Africa has the recent victory of hosting the Square Kilometre Array (SKA), an international radio astronomy facility that will spread across five countries in southern Africa with additional dishes in Madagascar, Mauritius, Ghana, and Kenya. Before the SKA, South Africa built the Southern Africa Large Telescope (SALT) which was dedicated in 2005. SALT is a ten-meter class telescope focused on the optical region of light with some near infrared. The Astronomy and Space Science community realised that South Africa needed to build a workforce of people that could maintain these facilities and scientists to use the facilities. In 2003, the National Astrophysics and Space Sciences Programme (NASSP) opened its doors to the first class of postgraduate and honours students. Seven years into the program I conducted a two year ethnographic study of the Programme. Of interest are the design of the Programme which utilises the astrophysics and space science expertise throughout South Africa, the structure of the Programme which takes students from their Honour year through their Masters of Science, and the success of the programme.