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Sung-Joon Park

GLOBAL PUBLIC HEALTH: WORKSHOPS, TECHNOLOGIES OF PARTICIPATION, AND THE AUTHORIZATION OF KNOWLEDGE IN ANTIRETROVIRAL THERAPY IN UGANDA

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Sung-Joon Park

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Edited by Ulf Engel and Richard Rottenburg

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Contact:

Richard Rottenburg (Co-Spokesperson)
DFG Priority Programme 1448
Adaptation and Creativity in Africa

University of Halle
Social Anthropology

Reichardtstraße 11
D-06114 Halle

Ulf Engel (Co-Spokesperson)
DFG Priority Programme 1448
Adaptation and Creativity in Africa

University of Leipzig
Centre for Area Studies

Thomaskirchhof 20
D-04109 Leipzig

Phone: +49 / (0)341 973 02 65
e-mail: info@spp1448.de

Staging global public health: Workshops, technologies of participation, and the authorization of knowledge in antiretroviral therapy in Uganda

Sung-Joon Park

University of Leipzig, SPP 1448, Project "Translating Global Health Technologies. Standardisation and organisational learning in health care provision in Uganda and Rwanda." (Associate)

CONTENT

Abstract

In this essay I focus on workshops to examine how scientific knowledge in global public health is authorized. More specifically, in this essay workshops will be approached to elaborate on the public performance of knowledge, which is often considered to be a crucial element in the conduct of scientific research. The performance of scientific knowledge will be conceptualized as the staging of global public health through which experts craft the credibility of their advice by involving the publics in the form of so-called 'stakeholders' and thereby create the basis for global public health interventions. I will narrate the staging of science in global health in the form of fictionalized minutes and capture some of the techniques deployed in creating order out of disorder in the supply of medicines in Uganda. The plot of this account begins with the stock-out of antiretrovirals in the country, which occurred between 2009 and 2010 and incited concerned questions about the fragmented landscape of antiretroviral therapy and more importantly the responsibility for the life-long supply of antiretrovirals in the country. I will trace these concerns through national and international media responses. These media responses will be contrasted with workshops held to discuss a shortfall of funding and advance particular institutional reforms. The discussion of techniques to present facts (powerpoint presentations), practices of deliberation (working group discussions) and material objects (paper sheets) in authorizing claims to knowledge suggest that workshops are better understood as technologies of participation. Workshops are neither simply inclusive nor coercive. They are productive in redefining what ought to be 'public' in global public health in Uganda by fostering agreements over the causes of the stock-out of antiretrovirals and the measures to be taken in the public interest in the context of an underfunded national health system.

"Phasing out"

In 2009, I began my field research on mass HIV treatment in Uganda by joining a two-days training workshop in "ARV supply chain management" for pharmacists. The workshop took place in Masaka about 140 km South of the capital Kampala. It was organized by the *U.S. Center for Disease Control (CDC)* and its local partner *Medical Access Ltd.*, which over the last few years had developed a well recognized expertise in managing the logistics for antiretrovirals in Uganda. In addition, the organizers had invited Brian[1] as an external trainer who worked for the *Clinton Foundation's Access Initiative (CHAI).* Brian was quite young compared to his North American colleagues of similar rank in Uganda and had a degree in economics. How many workshops he had joined that week already, we do not know, but he immediately left after giving his presentation. The facilitators introduced Brian just as a "very busy" person. Participants, who knew Brian from their everyday work, stated that he "is a dedicated person", who always responds to urgent queries about drug orders. At this workshop his contribution was to confirm rumors that CHAI would "phase out" its donations of pediatric antiretrovirals and the so-called

1 All names for places, people and events in this text are pseudonyms.

second-line antiretroviral regimens[2] in the following year and leave a gap of $ 1.2 million. This gap however is relative. The global market price for second-line regimens is significantly above the standard first-line therapies for adults, which had been subject to enormous price reductions. UNITAID injected large amounts of money into the market to steer the competition among pharmaceutical producers to lower the prices for these expensive formulations. CHAI was contracted to procure these antiretrovirals and supply these medicines as donations for a period of two years. After this period, according to the agreement with UNITAID, CHAI would turn to the next global health challenge; in this case, anti-Malaria medicines. In relation to Uganda's national health budget a gap of $ 1.2 million is quite significant, which has been persistently staying at $ 18 million over the last years. Thus Brian's presentation gave suggestions how to recalculate the budget to accommodate the gap left by CHAI. Pharmacists were advised to switch children from syrups to pills, or to switch patients to other regimens supplied by the national health system, which practitioners in Uganda term the 'public sector' opposed to the 'private sector' comprising nongovernmental organizations. Ultimately pharmacists had to reorganize the programming of antiretroviral by adjusting patient numbers to the available antiretrovirals in the country.

After this workshop, I attended many more workshops in the course of my field research on the emergence of novel infrastructural orders in mass HIV treatment in Uganda.[3] My own participation was motivated by a desire for the latest information on the situation of the supply of antiretrovirals and more importantly by questions about the future of funding for antiretroviral therapy in Uganda. I shared this motivation with pharmacists, whom I met during these workshops, whose needs for basic information on funding, supplies, or patient numbers were, of course, more urgent in respect to the everyday work in providing patients with antiretrovirals.

This need for information was undermined by the fluidity of projects in mass HIV treatment in Uganda, which Susan Reynolds Whyte and others describe as "projectification of AIDS care" (Whyte et al. 2013, 143). Projects come and go in Uganda. If projects phase out, patients are assumed to be 'taken over' by the Ugandan government. Like in Brian's case such decisions have to be communicated in a timely manner for pharmacists to have a realistic chance to recalculate their budgets and moreover to shift patients supplied by donor agencies to antiretrovirals procured from the *National Medical Stores (NMS)*, mandated to supply the national health system with medicines. The NMS, however, frequently failed to supply antiretrovirals leading to massive stock-outs of these medicines and inciting the public controversies on the infrastruc-

2 The distinction between first-, second-, and third-line regimens reflects a crucial aspect of the global pharmaceutical market. First-line regimens, unlike second-line regimens, are usually drugs for which patents have been expired and are thus available as cheaper generics. Official treatment guidelines recommend starting therapy with these first-line regimens and switching patients to more expensive second-line therapies only when drug resistances or other complications arise.

3 Field research in Uganda was conducted from 2009 onwards until 2011 within the project "Translating Global Health Technologies" of the DFG Priority Programme 1448. The main part of this field research followed pharmaceuticals through the complex infrastructural circuits in the supply side of antiretroviral therapy to understand global public health interventions configure access to treatment. In terms of hospital ethnography this field research was essentially an attempt to extend participant observation carried out *within* a hospital to transactions *between* hospitals and therefore followed pharmacists in their everyday work in organizing the supply of antiretrovirals. Much of this kind of field research was conducted at headquarters of organizations, where participant observation is difficult to conduct. I regularly visited selected ART programs in the country, which had experienced antiretroviral stock-outs. Relevant for this essay is my participation at various surveys to stabilize the supply side of antiretrovirals, which next to actual interventions and baseline survey included numerous workshops.

tural disorder in the supply of these life-saving medicines. These concerns over the stock-out of antiretrovirals referred to the idea of a national health system, in which the developmentalist state after the introduction of harsh structural adjustment programs has been replaced by nongovernmental organizations in delivering health services (Pfeiffer and Chapman 2010; see also Prince 2014). The infrastructural disorders resulting out of this projectification, interestingly, reinsert the question of what constitutes the 'public' in global public health over the lack of predictability necessary for the conduct of public life: who will in the end claim 'ownership' of the fragmented infrastructures of mass HIV treatment programs and moreover who will take 'responsibility' for the fiscal life-long commitment to antiretroviral therapy?

In this essay I will approach these concerns about ownership and responsibility by examining workshops as *technologies of participation* to authorize scientific knowledge and address controversies about the future of antiretroviral therapy in Uganda. My interest in workshops draws on scholarly works in the field of *Science and Technology Studies*. In particular, the iscussion of workshops in this essay is inspired by Stephen Hilgartner's call to pay attention how science advice crafts its credibility and authority, which he captures as the staging of science (Hilgartner 2000). This performative dimension of science might be considered to be characteristic for current figurations of science and politics exemplified by the emerging global health (Rottenburg 2009b). I will develop my argument in three steps. First, this essay will begin with a few conceptual clarifications of workshops by elaborating in more detail the broader context of global health logistics and antiretroviral therapy in Uganda, which the above-mentioned example indicated. This description forms the background for the second part of the argument, which asks how the idea of the 'public' is reinserted into the politics of global public health by turning contestations over the supply of life-prolonging antiretrovirals into a consensus over the measures necessary to stabilize public health infrastructures in the country. Thirdly, I will elaborate in more detail the staging of scientific knowledge as a "drama of agreement" making certain reasons for stock-outs visible, while others are ignored (Hilgartner 2000, 5). Here, my discussion of the staging and enactment of an agreement aims to illuminate what it means to stabilize public infrastructures in the context of an underfunded national health system in Uganda.

Ethnography of workshops in global public health

The following account of workshops, like in the introductory example, draws on my own participation during my field research. This account will be narrated in the form of an ethnographic description of participation as a situated and embodied practice instead of reproducing workshops as a 'site' for the conduct of ethnographic research (see also Cerwonka and Malkki 2010). Workshops participation is rarely considered as a research method and reflected upon as a research experience. One reason for this is perhaps that workshops are in *any* scientific discipline, including anthropology, considered as elementary instruments to exchange basic information, knowledge, and to establish professional relations. To paraphrase Tim Ingold's discussion of the distinction between ethnography and anthropology, doing anthropology at workshops is to *present* anthropological knowledge to a scientific community (Ingold 2007). In contrast, in doing ethnographic research workshops often figure as a site where the dissemination of to informants takes place, which is later, however, not captured in the anthropological analysis. Or, workshops are just what the others, mostly development projects, do in the field.

According to this distinction workshops are secondary to an understanding of what is at stake in people's lived experiences – to take the frequently quoted term by Arthur Kleinman and Joan Kleinman (1991) – which are considered to be located outside of these workshops.

This perspective significantly influences anthropological assessments of the value of workshops in the field of international health, now termed global health (Pfeiffer and Nichter 2008). The acknowledgement that health interventions should involve the 'targeted' communities in the definition and implementation of projects is in principle a widely shared understanding in the field of global public health, which essentially includes medical anthropologists. However, the way conventions of participation and collaboration are instituted in the form of workshops, focus group discussions, meetings, public debates, and conferences have been variously called into question (e. g. Crane 2013; Hardon 1992). Normative assumptions about deliberation, collaboration, and participation, which are usually associated with workshops, of course fundamental for ethnographic research too, stand in stark contrast to the empirical realities of workshops organized by the great number of projects in the country. The most immediate concern is that the growing number of workshops undermines the provision of health care services by distracting from the actual hospital work. In the case of the above-mentioned workshop, pharmacists were travelling from different places to Masaka. To keep the work at ART-clinics going, which many health workers perceive to be overwhelming, staff had to rotate. Furthermore, to enable participation workshop organizers provide travel allowances, which are often not used for transport. Instead it constitutes a crucial additional source of income, which may not sit well with projects' understanding of participation as being motivated by genuine interest or voluntariness only (Geissler 2012).

As a result practitioners and commentators have increasingly become skeptical about the value of workshops. "As far as anyone can tell, Uganda has been workshopping non-stop since 1986 [after the NRM government took power]. Workshops will be one of those things to remember of the Museveni era", as a Ugandan journalist writes.[4] Such observations on the projectification in global public health are neither limited to the field of health care nor to Uganda (Whyte et al. 2013). The anthropologist Veronika Fuest argues that the projectification in the broader field of development aid led to a "workshop culture [in which] economic, social, political and symbolic resources are furnished to those invited, i. e. those selected to participate" (Fuest 2014). That is participation is mostly limited for a variety of reasons to a smaller group of people, which are usually termed stakeholders, but does not necessarily include the people directly affected by projects, as I will elaborate in more detail below. Moreover, as Fuest puts it, workshops are perceived as a "welcome sources of *entertainment*," instead of being a source of knowledge dissemination and deliberation (Fuest 2014; emphasis added).

These accounts of workshops raise a number of critical questions. Do workshops undermine the impulse to base global public health on scientific evidence and fail to involve the publics in decision-making processes in a meaningful way? In this essay I wish to deploy the term "entertainment" more consequently as the performance of scientific knowledge and shift the attention to an understanding of workshops as *technologies of participation* that enable coordination among a heterogeneous group of actors. Such an analysis of workshops goes beyond the understanding of workshops as a site for anthropological research, but instead includes practices organizing workshops, giving powerpoint-presentations, and the use of various mate-

4 Bernard Tabaire: "To actually fix potholes, first take up a job at a daily paper"; *Daily Monitor*; 8. 5. 2010.

rial objects as essential characteristics of how forms of scientific authority of global health are created.

Following Hilgartner workshops can be understood as "systems of stage management [which] are key technologies for making credible knowledge" for which a "dramaturgical perspective is well suited to examining how these systems operate" (Hilgartner 2000, 20). Credibility and trust in the production of scientific knowledge are not intrinsic to science advice, rather the basis of experts' authority is created and moreover enacted through a variety of dramatic techniques (Hilgartner 2000, 6). Like in a drama or an entertainment conveying an argument is also a matter of good performance. Agreements over matters of concern taking the form of a drama requires following experts, the public performance of knowledge, and how participants are made to listen through a variety of techniques deployed in workshops. Such performances are the result of skilled moderation and rhetorical techniques, which, according to Erving Goffman, are elementary practices exerting social power through "information control" (Goffman 1956, 87).

In the context of global public health, understanding workshops as public performances of scientific knowledge raises the controversial question how the 'publics' of African public health ought to be conceived of (see Prince 2014). Scholarly debates about 'the public' have been significantly influenced by Jürgen Habermas' study of the public sphere (Habermas 1989[1962]). Habermas contrasts the staging and even manipulation of the public with a liberal conception of the political public sphere, in which organizations "mediatize" the publics by essentially mobilizing a free and critical discourse over any public matters of concern (Ibid., 232). This account of the public, which reads and reflects on media news and information presented in various forums, has been frequently called into question for being an ideal typical reconstruction that hardly applies to the kinds of publics emerging in African contexts (see also Marsland 2014). Yet, it may be equally misleading to dismiss this ideal typical definition, as it already has become a fundamental part of the daily work of most organizations in the field of global public health, which operates through mass media and more importantly through workshops. Workshops rather question the presumption that the definitions of the public draw on clear distinctions between the state and the society and between governments and individuals. Quite the opposite, contemporary regime of governance in global public health include a heterogeneous set of nongovernmental organizations like humanitarian relief organizations, donor agencies, and academic institutions, which are assembled around projects. These projects and the workshops that flow out of the large number of projects may rather exemplify what Michel Foucault elaborated as "technologies of government" in various writings (e. g. Foucault 2008). In this Foucauldian conceptual frame, the publics do not constitute independent realities, which are allegedly 'addressed' by such technologies of government, for example the dissemination of research findings (see also Foucault 2008: 297). Rather, the multiplicity of publics in global public health requires novel technologies of government to articulate claims to scientific and political authority.

Workshops provide crucial insights into the way technologies of government, which are here termed 'technologies of participation', turn complex matters of concerns into concrete problems on which actors can agree upon or not. The notion of technologies of participation pays attention to the affective capacities of techno-scientific objects and the *eventful* character of contemporary technologies of governance (Braun and Whatmore 2010, 21; Haferburg and Hofmann 2014, 6). In the case of workshops discussed in this essay, these technologies of participation are embodied in the form of a collective experience of evidence through which the basis for an agreement is established. In contrast, to more durable infrastructures or institutions, workshops as eventful technologies cast more pointedly how social problems are addressed

through the performance of scientific knowledge. That is, in the case of the shortage of pharmaceuticals in Uganda, the credibility of global health expertise rests on the collective experience of evidence explaining these problems and legitimating institutional responses to the stock-out of pharmaceuticals during a workshop. Technologies, like workshops, may even reshape the meaning of deliberation and participation as practices of ordering medicine in processes of neoliberal globalization in the realm of global public health (Pfeiffer and Chapman 2010; see also Schnitzler 2013). Instead of understanding the outcome of a workshop to be independent from its format, approaching workshops in the performative idiom suggests following the use of maps, figures, and powerpoint-presentations as embodied practices and examine how they stir discussions, prefigure agreements, and thereby enact the reality they seek to describe.[5]

The background: treatment crisis

In the first years of the so-called global fight against HIV, Uganda was particularly prominent for its progressive HIV politics and attracted large amounts of funding for HIV treatment. In 2004, access to antiretroviral therapy became free of charge in Uganda based on the unprecedented flow of money, which global health advocates considered as a proof for the moral responsibility of the "wealthy world taking action on a previously unimaginable financial scale" to "improve the lives of the world's poorest" (Farmer 2007). At that time, "money did not matter", as the pharmacist Edith Musisi recounted her experience with the intensive scaling-up of access to treatment

> *You know, I mean, I call it insane amount of money. HIV has been always in the area (Uganda), but it's been crazy amounts of money, which have been coming in. Like in the beginning, there was the Bush administration; there was pressure on these institutions to spend money and to put pills in a patient's mouth. Money did not matter at the time.*[6]

The influx of donor money, most notably through PEPFAR (the U.S. *President's Emergency Plan For AIDS Relief*) and the *Global Fund to fight against HIV/AIDS, Malaria, and TB* led to a rapid expansion of treatment numbers (for the case of Uganda see Richey 2012, 830). Before 2004, when free access to antiretroviral therapy was introduced, official sources estimated that 450 people had access to treatment, which increased to 10,000 by 2002 and to more than 200,000 in 2009 (WHO 2003, 7).

The influx of the unprecedented amount of funding in a short period of time, however, also led to an enormous fragmentation of the global health of antiretroviral therapy in Uganda and elsewhere. That is the flow of money, pharmaceuticals, and information to provide access to treatment travels through a complex entanglement of nongovernmental organizations and not-for-profit drug suppliers, which essentially bypass existing public health infrastructures (e.g. Garrett 2007). As a result of this projectification basic information on patients and medicines

5 See also Hubert Knoblauch's discussion of powerpoint-presentations as communicative practices characteristic for contemporary knowledge societies (Knoblauch 2008).

6 Interview MS; Medical Access Kampala; 1.7.2010; Kampala.

are scattered in the fragmented landscape, in with each project has its own mechanism to count patients (see also Barnett and Whiteside 2006, 2). Edith Musisi explained:

> *In Uganda out of the one and a half million people that are living with HIV/AIDS, nearly 220,000 have access to ART. That number [in] Uganda keeps changing. Sometimes depending on whom you speak to, you know, you may have a different number. You can take whatever you have – okay?*[7]

Edith's account suggested that treatment numbers are not only inaccurate, but that only 50% of all eligible patients had access to treatment. Furthermore, HIV prevalence in the country is estimated to be much higher, namely 1.5 million people. The way bodies and drugs are counted suggests that access to treatment is less stable than one might expect in regards to the frequent portrayals of an abundance of resources in the global fight against HIV.

The lack of predictability in HIV funding, crucial for planning a life-long provision of therapy, is exemplified by the above-mentioned phasing out of CHAI presented by Brian in the mid of a major funding crisis in Uganda. In 2009, CHAI was not the only organization threatening to phase out its support for antiretroviral therapy in Uganda. Brian felt sorry and admitted, the "end of UNITAID donation is not timely, as ARV budgets are already being squeezed by global funding trends." Moreover, since 2005, shortly after free access to treatment was introduced in Uganda, a corruption scandal in the country had led to a suspension of several grants worth more than USD 200 million including funding for antiretrovirals (MoH 2011; see also Taylor and Harper 2014). The budget for antiretrovirals of the national health system could hardly cover the gap left by the suspension of Global Fund grants. In 2009, $ 8.89 million were allocated for antiretrovirals, which however 'ate' into the overall budget for essential medicines as will be described below in more detail.

Weeks after the workshop, where Brian announced the phasing out of CHAI's support, the shortage of funding became apparent in a countrywide stock-out of antiretrovirals. Antiretrovirals are not a cure. They turn HIV from a deadly disease into a chronic illness, which requires a constant supply of antiretroviral medicines. Stock-outs are dangerous interruptions in the supply of antiretrovirals, such that patients may miss their daily doses or sick patients, eligible for treatment, are not started on treatment. Stock-outs can also foster the development of drug resistant virus strains. As treatment is increasingly regarded as prevention, delays in initiating treatment might increase new HIV infections. Patients in turn experienced the stock-outs in more dramatic ways, as they are constantly counseled to adhere strictly to treatment, and asked "Am I going to die?" (Park 2012).

These stock-outs of antiretrovirals and their dramatic consequences for patients are, both, a sign for the lack of resources and a lack of coordination between the public and the private sector. The coordination of a multiplicity of projects, which mostly run for a limited period of time as the introductory ethnographic accounts suggests, require coordination for which treatment numbers are essential tools. Such calculative practices require reliable treatment numbers to calculate the relative need, epidemiological data on HIV prevalence to determine the absolute need, and more importantly reliable information on funding commitments to provide life-long treatment for antiretroviral therapy.

7 Interview MS; Medical Access; 1.7.2010; Kampala.

As soon as the first stock-outs were reported, the main Ugandan daily newspapers, *New Vision* and *Daily Monitor*, began to inquire into the pharmaceuticals politics in global health behind the stock-out of antiretrovirals. 'Behind' is a provisional metaphor to give an idea about the public's interests in the 'backstage' of the pharmaceutical politics, where hidden and powerful decision about medicines and funding are supposedly taken. This form of critique differed from the more prominent campaigns against the early pharmaceutical politics of antiretroviral therapy by transnational activist organizations in claiming access to treatment as a human right (e. g. Robins 2004).

In August 2009, *New Vision* published an article about the shortage of ARVs under the unsettling headline "HIV / AIDS – No more free drugs" (*New Vision*, 30.8.2009). *New Vision* first cautiously quoted the concerns of a local NGO, which "plead[ed] with the Ministry of Health and National Medical Stores to tackle the drug shortage or face a social disaster. Accusing the ministry of negligence, the activists said they do not understand why the ministry cannot start new patients on antiretroviral therapy" (Ibid.). A few days later, articles in *Daily Monitor* carried the headlines "The disturbing mystery of missing HIV / AIDS drugs in Uganda" reporting on the "moral and medical dilemma as patients old and fresh are suddenly left without drugs for months" (*Daily Monitor*, 3.9.2009). The newspaper considered a range of factors exacerbating the shortage of antiretrovirals: the global financial crisis and the corruption of Global Fund money, which led to the "dwindling of money for AIDS treatment leaving patients reeling". The article surmised that "the Ugandan authorities have no control over", both the scale-up of access to treatment and the stock-outs. As the *Daily Monitor* explained, "a glance at the plethora of organizations involved in HIV / AIDS management and the mangled distribution network for drugs cannot qualify the success of treatment program nationally. It is to the broken health care system that some point for most of the problems that Uganda is facing" (Ibid.).

The stock-outs in Uganda between 2009 and 2010 also raised international concerns about a treatment crisis in Africa. Peter Mugyenyi, a prominent Ugandan HIV physician and researcher, warned in the journal *The Lancet*, that the stock-outs would be an indicator for the "flatlining" of donor aid, which he regarded as a "recipe for chaos" (Mugyenyi 2009, 292). According to public health experts like Mugyenyi, the stock-outs of antiretrovirals could foster irrational uses of antiretrovirals and consequently lead to drug resistances. In fact, public health experts from the beginning have feared an "antiretroviral anarchy" in the distribution of antiretrovirals in 'Africa,' as all kinds of infrastructures were regarded to be missing to control patients' proper adherence to treatment (Harries et al. 2001). The stock-outs in Uganda also came to be depicted as the "front lines" where the "AIDS war [was] falling apart," as a series in the *New York Times* provocatively reported.[8] The author of these articles even quoted Eric Goosby, the then new Global AIDS Coordinator of the Obama administration, who stated, after he had toured Uganda during the stock-out of antiretrovirals: "I'm worried we'll be in a *Kampala situation* in other countries soon."

The media responses to the stock-outs give a first illustration of how the public is inserted into the pharmaceutical politics. The story behind the stage entails corruption allegations next to concerns about insufficient funding levels for antiretroviral medicines, which are meant to be a life-long therapy. Yet, it is a more fundamental contestation of global public health over the permanent and reliable provision of life-saving medicines expected of it. Such contestations raise the question to whom to attribute responsibility and accountability on the life-long

8 "At front lines; AIDS war is falling apart"; *New York Times*; 9.5.2010.

supply of antiretrovirals. More specifically, how are the NMS, the Ministry of Health, or the Ugandan government asserting authority in the public sector against the flurry of global public health interventions? How do these organizations delineating and constructing institutional boundaries over the supply of antiretrovirals? Finally, to borrow from Cori Hayden (2007), the stock-outs raise the question how the 'publics' are reinserted into the pharmaceutical politics of global health?

It is important to resist the assumption that the reality of global health politics is hidden and takes place 'behind' the stage in the form of top-secret meetings and confidential reports. Such reports and meetings of course do exist, particularly on the supply of expensive antiretrovirals. But the real politics behind the stock-out of antiretrovirals may not always be illuminative compared to the practices to control the information spread to a public audience in an attempt to redefine the responsibility for stock-outs, as I will describe in the following section. In the case of the stock-out of antiretrovirals, this information control deployed during workshops separates evidence from rumors spread through newspapers by directing people's attention toward socially and politically acceptable explanations. This involves the provision of selective insights into the backstage of global health politics to dissolve speculations about the 'real story' behind the stock-outs inciting the media response mentioned above. Moreover the staging of science turns the backstage into a front stage, where stakeholders are invited to involve themselves in decision making processes.

Harmonization workshop: from backstage to front staging global health

After the shortage of antiretrovirals became more evident in the months between 2009 and 2010, the infrastructural fragmentations in the supply of antiretrovirals came to the attention of the Ministry of Health and various non-governmental organizations. Shortly before the occurrence of the stock-outs, the US government had launched a "new project" to stabilize the supply chain of pharmaceuticals in Uganda. I will refer to this project with the acronym ENSURE for *Ensuring Ugandans Rights to Essential Medicines*. The overall aim of the ENSURE-project was to "ensure that Uganda's population has access to adequate quantities of essential medicines and health commodities," as its mission formulated and funded by the US government. ENSURE was officially launched in 2009 and will run until 2015 to provide a package of interventions to improve rational use of medicines by testing a more comprehensive indicator-based tool called "good pharmaceutical practices". Pharmacists described this "new project" with bewilderment to "have $40 million for five years. And they do not buy a single drug, it is just for technical support."[9] That is, ENSURE does not supply medicines like other projects in the domain of HIV treatment, but attempts to stabilize and moreover correct the effects of the projectification of therapy.

So far, the shortage of antiretrovirals was mostly raised as a problem during workshops and through various channels. ENSURE by contrast conducted a comprehensive survey dissecting

9 Interview JK, pharmacists; 25.11.2009; Kampala.

the fragmentations in the supply of medicines to offer a "policy option analysis" on how to stabilize the supply of antiretrovirals and essential medicines in general. This policy option analysis was presented at a workshop in April 2010 at one of the larger hotels in the middle of Kampala. A group of national and international experts, hired by ENSURE to carry out a situational analysis of the pharmaceutical supply system in Uganda, presented their findings and issued their recommendations at this workshop. The invitation distributed by email stated that this workshop would "bring together pharmaceutical policy and supply chain partners in Uganda and will aim at identifying and evaluating alternative policies and interventions that can best address some of the existing challenges in ensuring availability and access to essential medicines and health supplies in the country."

All participants were promised the possibility to "involve themselves in proposals for possible options that are cost effective and have high potential for maximizing access to and availability of essential medicines and health supplies in the public sector." The invited participants were the so-called 'stakeholders' in the public sector including international health organizations, philanthropic foundations, donor agencies, and state authorities. Unlike other workshops the organizers explicitly aimed to address a greater audience representing the diversity of actors in the field of global public health. Most notably the workshop involved Ugandan practitioners – district health officers, doctors, pharmacists, and logistic experts. In addition, journalists of all major Ugandan and East African newspapers next to academicians from the Makerere University and representatives of HIV activist organizations were invited. Altogether more than 100 people participated at this workshop.

The discussion of the shortage of antiretrovirals in the country was not limited to one workshop. The analyses and explanations of the stock-out of antiretrovirals travelled with these participants from one workshop to the other. This travel can be understood as a "chain of translation" (Rottenburg 2009a), connecting a series of workshops in the production of an objective account of the stock-outs, necessary to reach a consensus on the reasons for the stock-outs and for determining a solution for these problems. In this chain of translation the shortage of antiretrovirals is constantly transformed before it is turned into practice. Each "act of translation is inevitably also an act of performative omission and addition (Rottenburg 2009a). At each of these events, the shortage of antiretrovirals was described in slightly different ways, as a stock-out in logistic terms, as a case of corruption, or as an institutional problem of the Ugandan public health system. Finally, the shortage of antiretrovirals came to be depicted as a lack of harmonization between donor organizations, while other explanations, like the lack of funding, were destabilized in staging a new intervention in pharmaceutical supply management.

Taking the performative idiom serious means that it is impossible to capture the chain of translation from the beginning to its end in the attempt to reconstruct the true story behind the stage. Instead I will describe the staging of global health at these workshops by presenting fictionalized minutes of a working group discussion on harmonization as a "drama of agreement" (Hilgartner 2000, 5). The fictionalization of workshops aims to emulate the structure of a drama in which the performance of the truth of the story takes the audience from a fundamental social conflict to its climax before a resolution is reached.[10] In these fictionalized minutes my participation of numerous workshops, conversations outside the workshop and interviews with experts participating at these workshops are here condensed to one single event.

10 For fictionalization of ethnographic accounts see Hilgartner (2000) and Rottenburg (2009a).

15. April 2010 – "The minutes of the harmonization discussion"

After the permanent secretary's opening speech, the organizer's introduction into the aims of the conference, and the first round of presentations on the problems in the logistics of pharmaceuticals in the country the audience split off into six different working groups to deal with various questions posed by the presentations and develop recommendations for these problems. The working group on "Harmonization and Streamlining," which consists of about 20 participants, is sitting in a circle. The group comprises health workers, government officials, academics, and representatives of all major funding agencies, and even the 'public' in the form of a journalist from the U.S. One of the participants wants to know "what harmonization means. Is it about funding, procurement, or storage? Can we harmonize the funding into one basket? Or should we keep the funding separate"?

The facilitator, a consultant from Peru and an international expert for pharmaceutical supply chain management, gives all participants a hand-out of a list with all antiretroviral regimens, which are currently procured in the country (see Figure 1).

The facilitator first explains the problem:

> *Currently each supplier does its own 'quantification', the calculation of need for specific ARV regimens. After the need is quantified, the supplier commissions each product. The result is a list of 31 different regimens, including first-line, second-line and even up-market third-line regimens. The first-line standard regimens are even supplied by 4–5 different sources, as you can see in the right column (right column in Figure 1).*

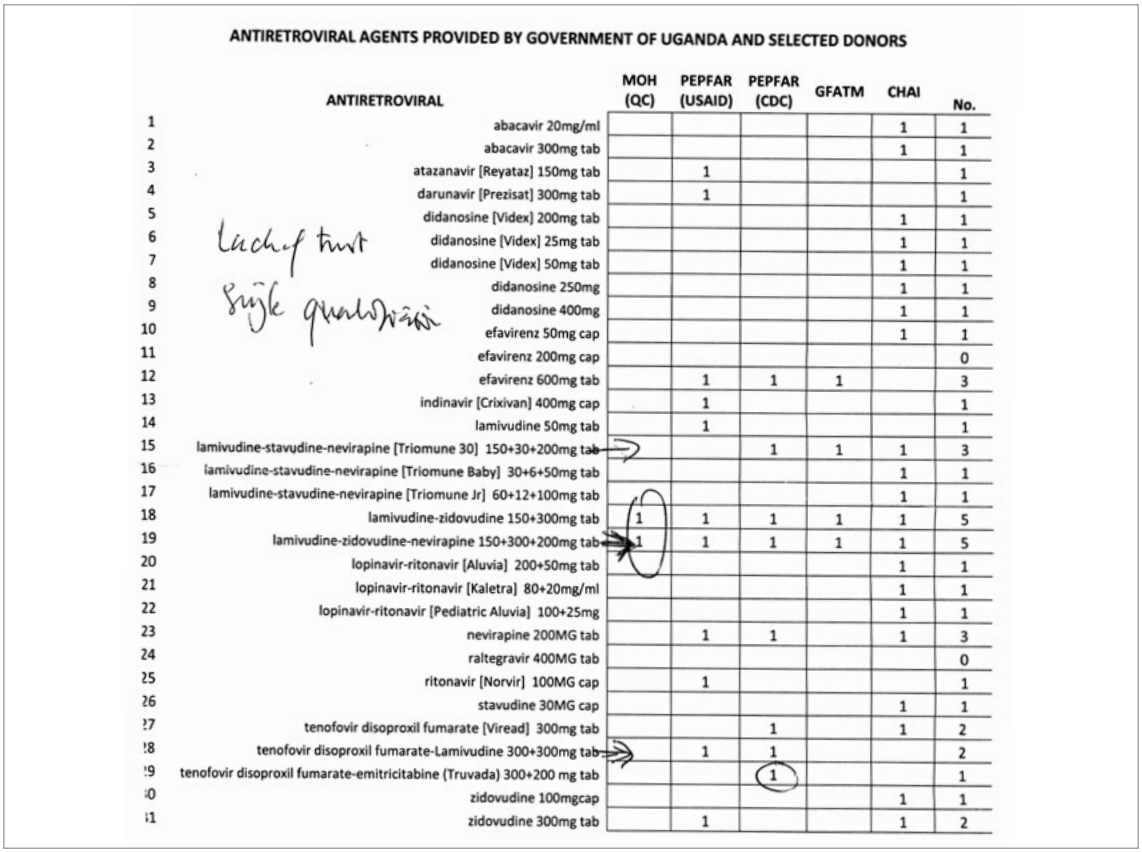
Then he explains the task of the working group:

> *We could say our approach is to harmonize and first reduce the number of antiretroviral regimens. Say for Uganda the most appropriate number is 24, or whatever the number. We should argue that we as a group we feel the most appropriate number is so and so. Further with the power that our organizations have, we can make an agreement. Or, we could say for Uganda the appropriate approach is to have 31.*

In a more persuasive voice he continues to explain the effect of such a collective decision to reduce the number of regimens from 24 to 31 or any other number:

> *Irrespective of our final recommendations, it will be a good decision, because we are all in harmony and have decided as a group, so that at the next step, we can ask, what are going to be the needs, what are the targets. And then with that we can start to quantify how much products we need, then we can decide as donors and say 'I can contribute ba ba ba. You will contribute ba ba ba'.*

He wants to make us understand that the unity displayed in the envisaged agreement – irrespective of the actual reduction of antiretroviral regimens – *is* already the real harmonization, where all actors have come to speak in one voice. Once the group would have an agreement, then the actual harmonization would be a technical challenge. But this challenge would not be rooted in disagreement:



ANTIRETROVIRAL AGENTS PROVIDED BY GOVERNMENT OF UGANDA AND SELECTED DONORS

	ANTIRETROVIRAL	MOH (QC)	PEPFAR (USAID)	PEPFAR (CDC)	GFATM	CHAI	No.
1	abacavir 20mg/ml					1	1
2	abacavir 300mg tab					1	1
3	atazanavir [Reyataz] 150mg tab		1				1
4	darunavir [Prezisat] 300mg tab		1				1
5	didanosine [Videx] 200mg tab					1	1
6	didanosine [Videx] 25mg tab					1	1
7	didanosine [Videx] 50mg tab					1	1
8	didanosine 250mg					1	1
9	didanosine 400mg					1	1
10	efavirenz 50mg cap					1	1
11	efavirenz 200mg cap						0
12	efavirenz 600mg tab		1	1	1		3
13	indinavir [Crixivan] 400mg cap		1				1
14	lamivudine 50mg tab		1				1
15	lamivudine-stavudine-nevirapine [Triomune 30] 150+30+200mg tab			1	1	1	3
16	lamivudine-stavudine-nevirapine [Triomune Baby] 30+6+50mg tab					1	1
17	lamivudine-stavudine-nevirapine [Triomune Jr] 60+12+100mg tab					1	1
18	lamivudine-zidovudine 150+300mg tab	1	1	1	1	1	5
19	lamivudine-zidovudine-nevirapine 150+300+200mg tab	1	1	1	1	1	5
20	lopinavir-ritonavir [Aluvia] 200+50mg tab					1	1
21	lopinavir-ritonavir [Kaletra] 80+20mg/ml					1	1
22	lopinavir-ritonavir [Pediatric Aluvia] 100+25mg					1	1
23	nevirapine 200MG tab		1	1		1	3
24	raltegravir 400MG tab						0
25	ritonavir [Norvir] 100MG cap		1				1
26	stavudine 30MG cap					1	1
27	tenofovir disoproxil fumarate [Viread] 300mg tab			1		1	2
28	tenofovir disoproxil fumarate-Lamivudine 300+300mg tab		1	1			2
29	tenofovir disoproxil fumarate-emitricitabine (Truvada) 300+200 mg tab			1			1
30	zidovudine 100mgcap					1	1
31	zidovudine 300mg tab		1			1	2

Figure 1: Handout for the working group "Harmonization and streamlining of ARVs".
The right column of this table captures all 31 antiretroviral regimens procured in Uganda. The most commonly prescribed regimen 'AZT/3TC/NVP' is encircled and the right-hand column shows that this regimen is procured by five different organizations in Uganda.

> *Now the next step would be more complicated than the first step, which is how to make sure I will contribute for what I am responsible. Then we will track how everyone contributes his or her share to this collective decision. At the end everybody knows, what and how much everybody is going to contribute. But the point is that everybody will do that. This is better than saying 'oh we dumped all the money into one basket and then it disappeared'. So, what I told you now is a spectrum of steps. First we all agree, that this is what all of us are going to contribute, for what and for how much. But this must be based on a common agreement on what is needed.*

As the facilitator argues, any recommendation on the harmonization would literally rely on the unity of the working group. In addition, this unity and the collective agreement on the harmonization would in turn lead to greater credibility by defining the responsibilities of each organization.

In contrast to this friendly invitation to a collective agreement, the participants of the working group discussion are more skeptical about the role of the Ugandan government. The journalist from the U.S., drawing on his experiences in Tanzania asks "Does 'harmonization' mean a harmonization between the donors, does it include the Ministry of Health?" This question raises a host of discomforting remarks.

For the representative of SIDA, the *Swedish International Development Agency*, the facilitator's suggestion is also omitting the role of the Ministry of Health.

> *We should ask if it is possible to harmonize at all? I mean, why are there so many different funding sources in the first place? Is it a question of trust? I think it is a question of trust. It is a lack of trust. Basically.*

A doctor from a district is even getting more explicit:

> *Do we need the Ministry of Health? Do we really need to invest into the Ministry? There is something at the Ministry that they all fear, that they cannot touch. What is that? We need to discuss that before we get into discussions about harmonization.*

Such comments are hardly surprising in regards public controversies over the stock-outs, which spread over the last months. Still, members of this group feel irritated by the doctor's rather blunt statement and the SIDA representative immediately supports the doctor's intervention by demanding stricter control of health budgets:

> *There is currently no monitoring. There is no follow up.* The hospitals order what they give away. And we replace the stocks without a proper analysis. *That is a fact. We loose track of what is actually bought in the whole of Uganda. There must be more transparency. There is lots corruption that nobody is addressing. This is a fact.*

In contrast, the researcher based at Makerere University, working for many years on HIV and pharmacy in Uganda, afraid of loosing the ground for an agreement, moans

> *I don't know what this question is about. Is this a historical question or is this a question that we can properly address here? So do we really want to tell the Ministry of Health, 'you have too many problems, lets just call the funders and let them sit together and solve the problems'? Please, lets put aside corruption, the GAVI scandal, the Global Fund scandal, and so on. Were these collective or individual cases of mismanagement? If there is supposed to be a way forward in the name of the* greater good*, we cannot do without the government. Let us take the government together with the funder.*

The coordinator of CHAI joins the discussion and luckily introduces a self-reflexive moment to the whole discussion:

> *Transparency works on an individual basis, it works me going into NMS or the Ministry of Health and speak to individuals. But there is no collective transparency between all of us.*

The coordinator's comments make the SIDA representative more frustrated:

> *Yet it is true, it is us, there is also a lack of communication between donors. We have our regular meetings, but this does not go far enough. Some programs keep away from the government, because they just want their program. We don't have even transparency between us.*

* * *

The working group did not really come to a conclusion on the harmonization of the procurement of antiretrovirals in regards to its disagreements over the relevancy of the questions, which the working group was supposed to discuss. The majority of participants would in fact not take any decision. The decision to harmonize the supply of antiretrovirals embraced by the facilitator and endorsed by PEPFAR's expert for supply chain management had already been decided upon. The ENSURE-project was like PEPFAR funded by the U.S. government. PEPFAR, which operated through three different agencies[11], had already stated to reduce the number of its implementers in Uganda years ago.[12] The question was rather how the Ugandan government would react to the harmonization strategy. A number of high-ranking administrators from the Ministry of Health, the Ministry of Finance and even from the Office of the Prime Minister were sitting in the audience to which the working group was presenting its results of the working group discussion as a collective agreement.

After these controversial discussions, the appointed rapporteur, a Ugandan pharmacists, endorsed in his presentation to the audience that the participants of the working group discussion had agreed that a harmonization was desirable

Figure 2: Presentation of the summary of the working group discussion on the harmonization.

This summary was presented to the audience including the general managers of all organizations involved in the logistics of pharmaceuticals in Uganda. Everybody should be convinced by the unity demonstrated by the community of stakeholders on the necessity to harmonize the supply of antiretrovirals in the country.

The working group discussion was a public staging of global health politics, which usually is considered to take place at the backstage. The legitimacy and credibility of the model for a 'harmonized quantification' literally depends on the representation of "a single, unified voice performatively forged out many, diverse ones" (Hilgartner 2000, 52). That is the agreement that the working group discussion demonstrated to the audience reflected a collective decision among a heterogeneous group of actors representing a plurality of opinions on the weaknesses of the supply of antiretrovirals in the country. More importantly, though only implicit, it was the voice of Ugandan professionals that demonstrated unity of global health actors – in this setting the summary could not have been presented by a PEPFAR representative. This collective agreement evolved as a 'drama of agreement,' as Hilgartner suggests, in which allegations of

11 In 2009 these agencies were the Center for Disease Control (CDC), USAID, ad Catholic Relief Services (CRS), next to a range of programs like the Walter Reed Program, which were funded by the US military.

12 See Emily Bass' article in *The Lancet* on PEPFAR's plans to reduce the patchwork of projects in Uganda (Bass 2005).

corruption were reframed and transformed into a general lack of transparency and coordination in the larger field of governmental and nongovernmental organizations in the country.

This exercise augmented the presentation of scientific evidence on the complex fragmentations of the supply of antiretrovirals and other pharmaceuticals in Uganda resulting out of the growing number of projects. The powerpoint-presentations confirmed that the supply of antiretrovirals is poorly integrated into the national public health system in Uganda. In addition, the presentations endorsed that the notion of public health in Uganda had been over the past few years subject to numerous experiments with international health models pulling in this or the other direction. Like in the exercise in the working group discussion, the evidence on the broader infrastructural and logistic fragmentations of the national health system had to be collectively experienced. Findings had to be visualized before numbers were presented as the 'hard evidence.'

Reinserting the public into global public health: from the stock-out of antiretrovirals to the supply of essential medicines

Before the lunch break, the SIDA representative had put a final question:

> *Why are we here focusing only on ARVs and what about the other medicines? What about ACTs? Yesterday we heard that the ACTs are going to be stocked-out. Maybe we can extend our discussion to other medicines. Is this really reflecting the bigger picture?*

On this question, it was the PEPFAR advisor who explained why antiretrovirals and the problems in the supply of these pharmaceuticals reflected the bigger picture:

> *This is the most fragmented and most complex of all the parts so that is why it is important.*

The last comments by the PEPFAR advisor shifted the focus from the complex fragmentation in the supply side of antiretrovirals to a more basic problem of the national public health care system in Uganda. The shortage of ARVs was in fact a result of insufficient funding, but questions of funding cannot be separated from the larger institutional framework to account for funding, pharmaceuticals, and patients. At the center of the staging of harmonization of antiretrovirals was the combination of a lack of information and a lack of funding. These 'gaps,' manifested in the stock-out of antiretrovirals, were not unique for mass HIV treatment. In principle, this was true for the whole national public health system in Uganda, in which all kinds of essential medicines were short in supply – just that this gap had been ignored over the last years. A variety of maps of the supply channels were provided during the workshop to underline the structural dimensions of fragmentations in the national public health system.

First, a map depicting the infrastructural entanglements in the supply of antiretrovirals by a variety of funding sources, like PEPFAR, the Clinton Foundation, Global Fund were displayed. Then the consultant contrasted this map with an even larger map situating these entanglements in the broader public health system, which depicted the sedimentation of the numerous international health programs of the last decade (Figure 3). Here, the entanglements of antiretroviral supply channels were only a small snapshot of the 'bigger picture' of the supply of essential medicines in Uganda.

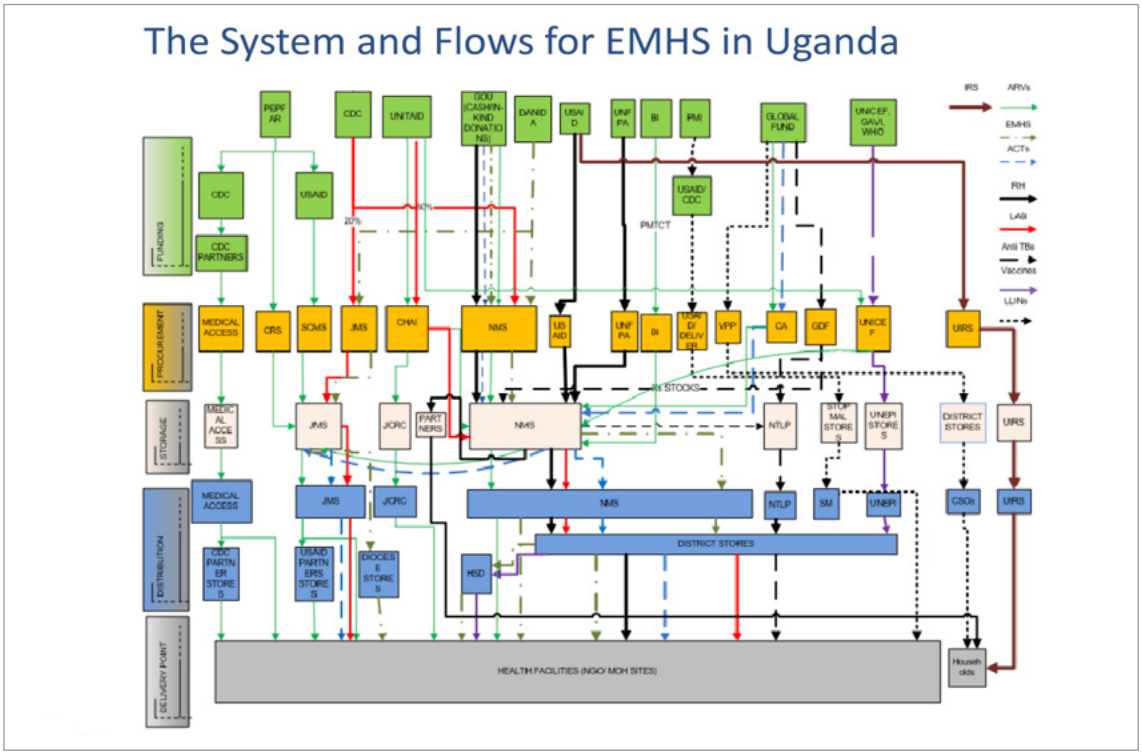


Figure 3: Presentation "Systems and flows for Essential Medicines and Health supplies in Uganda."

For the consultant this map was important, because "you just have to *flash* it on the wall and everybody can *see* that you have to simplify things". Seeing the complexities of the whole infrastructure gave indeed rise to the audience's collective astonishment. The visual experience was a powerful support to the credibility of the statistical figures in the following presentations on the funding gaps in the national health system.

Understanding the production and, more importantly, the presentation of evidence as a visible event is not to dispute the objectivity of these findings. Rather, it suggests that value of such information needs to be seen in the scene. As Hilgartner writes, "controlling what the audience sees is fundamental to a successful drama" (Hilgartner 2000, 11–12), in this case presenting evidence on the lack of coordination resulting in inefficient management of scarce resources as a visual experience. Visualizations in the form of maps and the provision of quantitative data of the public health system grounded the credibility of ENSURE's advice on scientific objectivity, which the public controversies on the stock-outs of antiretrovirals, playing out in the media, were not able to present with the same credibility.

During the following coffee break the consultants employed by ENSURE explained, "the real science is about numbers, mapping is rather something for policy makers and people like you." The scientific literature is not conclusive on the efficiency of complex supply systems as opposed to more centralized supply systems, which the workshop aimed at with its discussions of harmonization. This depends on more specific assessments of the underlying financing mechanisms. In fact, the larger map raised the question: where regulatory authority and budgetary control is vested in the infrastructural complexity in an underfunded national health system where all kinds of medicines are out of stock. The scientific credibility, which ENSURE was trying to construct, should endorse a new understanding of infrastructural problems in the

supply of antiretrovirals as a precondition for the idea of "strengthening health systems", which recent scholarly literature calls for (e. g. Frenk 2010; Pfeiffer et al. 2008).

The consultants continued to provide a series of fascinating presentations of the key financial indicators on the national public health system in Uganda, which were hard to come by at that time. The scope of this up-to-date analysis of the financing of medicines was unprecedented. The financial indicators captured antiretrovirals next to all other commodities such that the funding for HIV could be compared with the situation of the supply of all other essential medicines in the country. In these presentations the harmonization was endorsed as central problem for strengthening the national public health system – purely because of the immense amount of funding for antiretrovirals, which were missing for other kinds of medicines. Albeit the facts presented were scientifically speaking not revolutionary, it was the comprehensiveness and the novelty of the undertaking to collect this information, which transformed the workshop into a stage for the presentation of evidence supporting the presumably new idea of stronger health systems.

To retrieve this information the consultant presenting this evidence – Dr Michael – had to do an arduous analysis of the vouchers for all transactions in the public sector, which were archived at the Ministry of Finance, Planning and Economic Development, as Dr Michael told me, to highlight the exceptionality of the evidence.[13]

Dr Michael – Presentation "Financing Essential Medicines in the Public Sector"

In the financial year 2008 / 2009 donors and the government spent about $ 139 million in total on medicines (including antiretrovirals). This includes budget-support, government funding, and more importantly off-budget contribution by the donors. In detail:

- $ 53.82 million (39 percent) were spent for ARVs only,
- $ 22.89 million (16 percent) for essential medicines,
- $ 17.1 million (12 percent) for ACT.

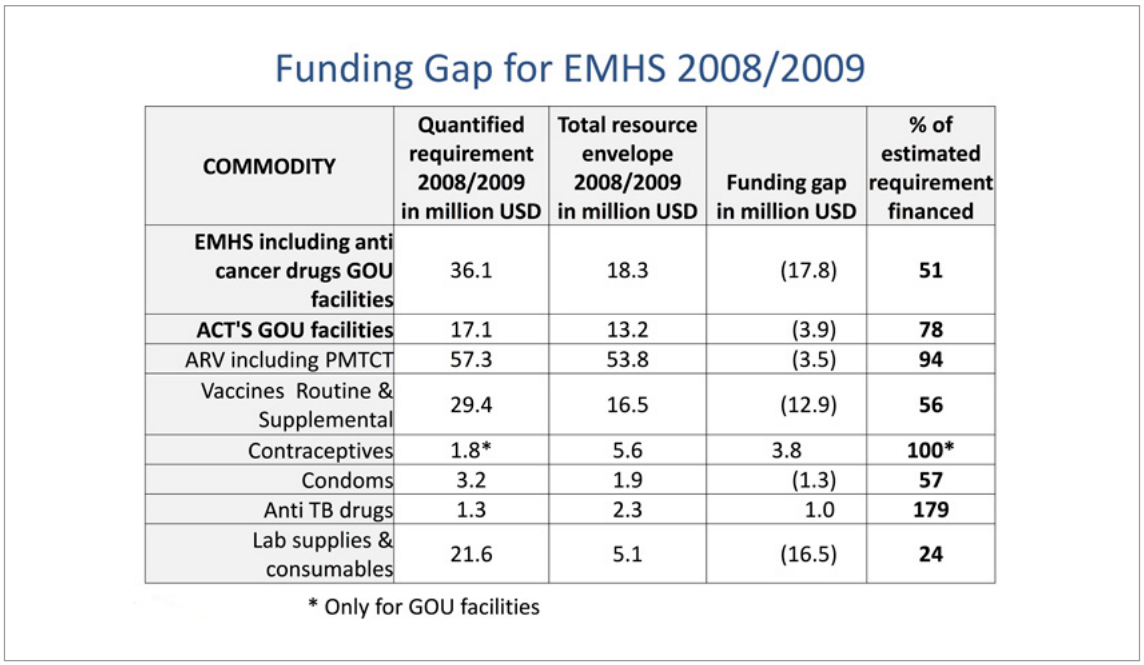
To interpret these figures, it is crucial to separate government funding from the so-called 'off-budget' expenditures coming from donor agencies:

- For antiretrovirals donor contribution amounted to $ 44.9 million (83 percent). This amount exceeded the total expenditures for all medicines by the Ugandan government, which was equivalent to $ 33.4 million.
- Out of this $ 33.4 million the government spent $ 8.89 million for ARVs only and $ 14.51 million together with ACTs; this makes already 68 percent of all government expenditures.
- That is, the Ugandan government spent only $ 9.9 million medicines for its Essential Medicines Program. This was usually topped up by an equivalent of $ 9.5 million by DANIDA.

As Dr Michael in his presentation emphasized, the audience should take a careful look at the funding gap, which is another indicator to assess the funding volumes for medicines and in regards to the actual needs. For essential medicines the funding gap amounts to 49 percent, or

13 Interview PJ; 13.4.2012; Kampala.

in absolute value $17.8 million. For antiretrovirals this funding gap was estimated to be only 6 percent or in absolute value $3.5 million (see Figure 4).



Funding Gap for EMHS 2008/2009

COMMODITY	Quantified requirement 2008/2009 in million USD	Total resource envelope 2008/2009 in million USD	Funding gap in million USD	% of estimated requirement financed
EMHS including anti cancer drugs GOU facilities	36.1	18.3	(17.8)	**51**
ACT'S GOU facilities	17.1	13.2	(3.9)	**78**
ARV including PMTCT	57.3	53.8	(3.5)	**94**
Vaccines Routine & Supplemental	29.4	16.5	(12.9)	**56**
Contraceptives	1.8*	5.6	3.8	**100***
Condoms	3.2	1.9	(1.3)	**57**
Anti TB drugs	1.3	2.3	1.0	**179**
Lab supplies & consumables	21.6	5.1	(16.5)	**24**

* Only for GOU facilities

Figure 4: Funding gaps for medicines in the country.
The right hand column shows the percentage of financing according to the requirements. The difference reflects the funding gap expressed in US dollars in the second-right column; 15–16.4.2010; Kampala.

* * *

ENSURE's key findings on the logistics of pharmaceuticals in Uganda actually provided a sobering picture of the future of the supply of medicines in the country. How are these figures to be understood and related to each other? The funding gap of 6 percent for antiretrovirals is comparatively low in regards to the massive stock-outs of antiretrovirals in the country. However, these figures were not based on the actual need. They were rather based on the projected requirements for that specific financial year, which were compared with the actual disbursement for these medicines. The actual demand for treatment in the country is much higher. According to the national treatment guidelines for ART, about half of the people eligible for treatment still do not have access to treatment, which is not reflected by the indicator. Moreover, this presentation did not capture the actual amount of antiretrovirals procured with this funding nor the fact that the scale-up of treatment numbers was largely a result of enormous price reductions – but not an increase of funding. That is the funding gap might have been small, but it did not reflect the future life-long fiscal commitment to maintain patients on antiretroviral therapy nor the financial requirements for a continuous scaling up of access to treatment in the country.

But omitting this information was crucial for embedding the stock-outs of antiretrovirals in the context of a heavily underfunded public health sector represented by the national health system. In fact, the funding gaps implicitly suggested that the resource requirement for antiretrovirals was 'eating' into the resource envelope for essential medicines. Moreover, as the

ENSURE consultant emphasized, one should not expect that the Ugandan government would increase the national health budgets in the near future. Thus, as the consultants explain, to stabilize the national health systems it is not enough to provide technical expertise to improve the logistic capacities in Uganda. Furthermore, the consultants proposed to consider the reintroduction of unpopular user fees for medicines – in the form of "cash-and-carry pharmacies" – in conjuncture with a narrowing of the list of medicines deemed to be essential, will be provided free-of-charge, and remain part of the national public health system.

The stabilization of the national health systems thus emphasized the need to further rationalize the supply of commodities through which the meaning of the 'public' in public health would be adjusted to what may be realistically expected from the national health system and what in future patients can be expected to pay by themselves. The authority of these reforms in building stronger health systems essentially drew on the experts' analysis of the infrastructural fragmentations brought by global public health interventions, which various commentators regard to be characteristic for the shift from public health to global public health (Pfeiffer et al. 2008). In this shift ideas of comprehensive public health care systems are replaced by interventions to control particular diseases, in this case through antiretroviral medicines. Against this background measures to stabilize the minimal logistics focus on the reduction of stock-outs of pharmaceutical commodities – instead of aiming at the improvement of health as a public good.

Final remarks

The provision of free antiretrovirals by global health organizations implies a lifelong fiscal commitment to fund antiretroviral therapy, for which projects, limited in time and space, might not be the most appropriate format. Projects, as my ethnographic examples tried to show, do not provide the same predictability and political accountability, which are usually associated with modernist notion of public health as an institution of the state.

James Pfeiffer, warning against the wider the effects of the projectification of public health systems, advocates for an integration of NGOs to strengthen national health systems, which since then has become a hallmark in current global public health debates (Pfeiffer et al. 2008, 137). The above-mentioned workshops described some of the implications of this aim in the domain of pharmaceutical logistics, which cannot be separated from the negotiation and contestation of financial authority in global health in the context of an underfunded national health system.

The practical implications of my discussion of workshops as technologies of participation point to the underlying conflicts in developing comprehensive and stronger health care system in Uganda, which involves questions about the fiscal life-long commitment to antiretroviral therapy in the future. The shortage of life-prolonging antiretrovirals erupting in sudden stock-outs and the lack of accountability and responsibility are manifestations of the unpredictability in the projectified landscape of global public health. The workshops framed this unpredictability as an infrastructural fragmentation asking for harmonization ignoring the insufficient funding levels for HIV treatment, which is of general nature. One cannot know if this sufficient funding will be always stable as the AIDS crisis is a long-term crisis as Tony Barnett and other commentators have suggested (Barnett 2004). In this regard, as the introductory ethnographic account of the phasing out of CHAI and the discussions of harmonization in workshops put forth, global

health funding is too dynamic for the kind of fiscal life-long commitment expressed by mass HIV treatment.

The last sections focused on workshops understood as a technology of participation to create the credibility and legitimacy of scientific representations of stock-outs and the proposed solutions to these problems. The discussion of workshops traced how these technologies of participation bring the publics into being through the involvement in decision-making processes in the form of an agreement. Working group discussions were exercises to practice the harmonization of the supply of antiretrovirals. These exercises shifted the attention from rumors about the real story behind the stock-outs, presumably corruption, and an unpredictable global health politics, toward more systemic questions on the institutional fragmentations of the larger public health sector. This exercise was complemented by the most recent and comprehensive information about funding levels, suggesting that funding for HIV would need to be considered against the background of a severely underfunded national public health system. Situating the stock-outs of antiretroviral in this context in fact endorsed the demand for greater rationalization of therapy for all kinds of conditions. Directing the audience's impressions by flashing maps are crucial objects of analysis in understanding the dramaturgical techniques to construct the credibility of global health knowledge, which forms the basis of its political legitimacy. However also this comparison ignores that resource requirement for HIV are in reality much higher and will in future continue to increase.

These technologies of participation are not limited to global public health in Uganda, but pertain more generally to open regimes of scientific knowledge production. The sociologists of scientific knowledge Michael Gibbons and others heuristically propose the term "mode 2 knowledge production" to describe the trends toward transdisciplinary, collaborative, participatory and socially distributed forms of knowledge production involving the public in addressing particular problems (Gibbons et al 1994, 11; see also Rottenburg 2009b). Mode 2 departs from hierarchically organized "mode 1 knowledge production" in which the authority of scientific knowledge presumably rests on a cumulative production of facts and the broadening of the evidence base of a theoretical assumption.

In the field of global public health, "mode 2 knowledge production" is spatially dispersed and potentially affects many publics. Technologies of participation, ranging from workshops to more technical devices like indicators, form the apparatus to communicate the credibility and legitimacy of these regimes of experts across distant places (Porter 1995). Understanding workshops as technologies of participation directs the analytic attention to some of the techniques of information control that enable deliberation and the reaching of agreements by bringing the publics of global public health into being. Exploring these mechanisms and the underlying power relations in performing scientific knowledge is important to probe into the basis of scientific authority of global health through which the lifelong supply of antiretrovirals is constantly redefined and reordered. In principle the technologies of participation deployed in "mode 2 knowledge production" do not contradict the more widespread expectation that knowledge production and more importantly the improvement of health is a cumulative process represented in the form of rising figures, like treatment numbers. However, when these expectations are disconnected from the proliferation of workshops, then these technologies of participation enforce doubt about the nature of agreements through which the public interest comes to redefine what public health ought to be.

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