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Emily E. Vasquez^a, Jennifer S. Hirsch^a, Le Minh Giang^b & Richard G. Parker^{ac}

^a Department of Sociomedical Sciences, Mailman School of Public Health, Columbia University, New York, NY, USA

^b CREATA, Hanoi Medical University, Hanoi, Vietnam

^c Institute of Social Medicine, State University of Rio de Janeiro, Rio de Janeiro, Brazil

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Rethinking health research capacity strengthening

Emily E. Vasquez^{a*}, Jennifer S. Hirsch^a, Le Minh Giang^b and Richard G. Parker^{a,c}

^aDepartment of Sociomedical Sciences, Mailman School of Public Health, Columbia University, New York, NY, USA; ^bCREATA, Hanoi Medical University, Hanoi, Vietnam; ^cInstitute of Social Medicine, State University of Rio de Janeiro, Rio de Janeiro, Brazil

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Health research capacity strengthening (HRCS) is a strategy implemented worldwide to improve the ability of developing countries to tackle the persistent and disproportionate burdens of disease they face. Drawing on a review of existing HRCS literature and our experiences over the course of an HRCS project in Vietnam, we summarise major challenges to the HRCS enterprise at the interpersonal, institutional and macro levels. While over the course of several decades of HRCS initiatives many of these challenges have been well documented, we highlight several considerations that remain underarticulated. We advance critical considerations of the HRCS enterprise by discussing (1) how the organisation of US public health funding shapes the ecology of knowledge production in low- and middle-income country contexts, (2) the barriers US researchers face to effectively collaborate in capacity strengthening for research-to-policy translation, and (3) the potential for unintentional negative consequences if HRCS efforts are not sufficiently reflexive about the limitations of dominant paradigms in public health research and intervention.

Keywords: health research capacity strengthening; research training; international collaboration; critical public health; Vietnam

Introduction

Health research capacity strengthening (HRCS) is a strategy that is implemented worldwide to improve the ability of developing countries to tackle the persistent and disproportionate burdens of disease they face (Council on Health Research and Development 2012). As such, HRCS initiatives, in their various forms, have seen substantial investments from donor agencies including (but by no means limited to) the US National Institutes of Health, the UK Department for International Development, the World Health Organisation and the World Bank. Although it remains difficult to determine the extent to which gains in global health equity are attributable to past HRCS efforts (Simon 2000, Cooke 2005), calls for sustained and even accelerated financial commitments to HRCS abound (World Health Organisation 2005, The Global Ministerial Forum on Research for Health 2008, Institute of Medicine Committee on the US Commitment to Global Health 2009, United Nations Economic and Social Council 2009, Council on Health Research and Development 2012).

This paper draws on our experience of directing an HRCS project funded under a US National Institutes of Health (NIH) grant programme that aimed to support

*Corresponding author. Email: eev2105@columbia.edu

behavioural and social science research capacity in developing countries affected by the HIV epidemic. We draw, additionally, on our observations about the experiences of nine other grantee teams funded under the same initiative and on a critical review of the existing literature on HRCS in the health sector. In the first half of this paper, we summarise the major themes in the existing HRCS literature. That we and our fellow grantees have faced many of these same challenges, despite the fact that some of these issues were discussed in the HRCS literature as early as two decades ago, underlines the difficulty of succeeding at this complex task as well as the importance of grounding future HRCS programmes in the existing knowledge about the field. Despite the many valuable insights in the voluminous existing literature on HRCS, our experience also leads us to believe that there are some challenges to the enterprise that may not have received sufficient consideration. Therefore, in the second half of this paper, we articulate some less remarked-upon challenges to successful HRCS. While we intend the first part of this paper to serve as a resource particularly for those new to HRCS programme design and implementation, the second part of this paper represents a critical contribution that provides new considerations we believe will be of interest to HRCS practitioners already well versed in this literature.

Towards a definition of research capacity strengthening

Because in recent decades international efforts to strengthen health research capacity have involved diverse approaches, it is necessary that we address the scope of the term HRCS for the purposes of this paper. Notably, in the literature to date, the terms ‘capacity strengthening’ and ‘capacity building’ are often used interchangeably, but their distinction is important. While ‘capacity building’ suggests an intention to establish a research infrastructure, the term ‘capacity strengthening’ more accurately conveys our intention to enhance a pre-existing infrastructure, the baseline characteristics of which influence our activities and outcomes (Potter and Brough 2004). While our focus has been to strengthen behavioural and social science capacity as applied to HIV, across the literature HRCS refers to a broad range of activities that aim to facilitate the production of knowledge relevant to public health, including research addressing the social drivers of health, health promotion, disease surveillance, health systems research, and research and development of drugs, vaccines and diagnostics (Burke and Matlin 2008).

HRCS initiatives typically target individuals, institutions and occasionally the broader political context to improve the ability of relevant actors to (1) prioritise problems and define a research agenda, (2) develop systematic evidence, and (3) disseminate and apply the evidence generated (Lansang and Dennis 2004). The synergistic impact of intervention at multiple levels – to target individual scientists, their institutions and the macro-level context in which these are situated – is widely considered the ideal for HRCS initiatives, though in many cases interventions fall short of that goal (Nuyens 2005).

The last several decades have seen the rise of several HRCS models, which are sometimes combined and range from graduate or postgraduate fellowship programmes (usually for training in Northern universities), to institutional partnerships involving a collaboration between matched research institutions (typically a Northern institution serves as mentor to a Southern mentee institution), to the

establishment of Southern centres of excellence, which are backed by long-term domestic and/or international funding (Lansang and Dennis 2004, Nurse and Wight 2011). In this essay, we focus specifically on HRCS initiatives that support transnational partnerships between research institutions. Such partnerships are by no means simple or easy to construct. On the contrary, they are inevitably shaped by the long history of global health, and its earlier incarnations as international health and tropical medicine (Macfarlane *et al.* 2008), and by the complex power relationships that continue today to shape interactions between Northern and Southern institutions. In this review, we will also seek to highlight some of the ways in which these historical and contextual factors influence the possibilities for success of the HRCS programmes and the longer term partnerships that they seek to support.

Background

Our HRCS initiative, the Social Science Training and Research (STAR) Partnership, based in Hanoi, Vietnam, is one of the nine projects funded under a 2006 Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) Request for Applications to strengthen the research capacity in HIV-affected locations (Department of Health and Human Services 2006). In our case, we have connected the Department of Sociomedical Sciences at the Mailman School of Public Health at Columbia University with Hanoi Medical University's (HMU) recently founded Department of Medical Ethics and Social Medicine and HMU's Center for Research and Training on HIV/AIDS with the goal of creating a regional hub for social science research on HIV and AIDS at HMU.

Like the STAR Partnership, each of the programmes funded under this initiative involved some combination of mentorship, training and hands-on research experience coupled with institutional inputs to foster an environment conducive to research. Reflecting the expertise of the key personnel engaged with each HRCS partnership, the level of research capacity already present in each setting and the specific exigencies of responding to each country's epidemic, the projects supported under this initiative have provided training in research methodologies ranging from social network analysis in Uganda to ethnography in Vietnam. Programmes have also supported training necessary to develop critical institutional competencies, such as intensive trainings for the Institutional Review Board's staff.

HRCS: long-standing challenges still relevant today

Our experiences, over the course of the five years of the STAR Partnership, as well as the experiences shared by leaders of our fellow grantee teams during the meeting held midway through our five-year collaborations, make it clear that the challenges facing HRCS initiatives articulated by early practitioners, such as Trostle (1992), two decades ago, continue to be relevant. Indeed, over the last 20 years, a number of critical themes have been consistently addressed in grey literature, peer-reviewed case reports and critical reviews of the challenges involved in the research capacity strengthening process. In Table 1, we summarise the existing consensus regarding the key barriers to research capacity strengthening, drawing on previously published literature, on the challenges that we have faced in our own project and on the themes

Table 1. Recurrent themes: long-standing challenges to health research capacity strengthening.

Level	HRCS challenges	References
<i>Interpersonal level</i>	<ul style="list-style-type: none"> ● HRCS initiatives are sensitive to sustained trust and personal compatibility of those involved ● Barriers arise from language and culturally diverse communication styles ● Differing expectations regarding appropriate training style (format of training sessions, including speed of progression through training material) ● Differing research interests, priorities and expertise between HRCS partners ● Over commitment of HRCS partners and trainees due to competing commitments, including teaching, administrative duties, second jobs 	<p>Lansang and Dennis (2004), Mayhew (2008)</p> <p>Maina-Ahlberg <i>et al.</i> (1997), Stillman <i>et al.</i> (2006), Marshall-Lucette <i>et al.</i> (2007), Mayhew (2008), Airhihenbuwa <i>et al.</i> (2011)</p> <p>Marshall-Lucette <i>et al.</i> (2007)</p> <p>Mayhew (2008)</p> <p>Trostle (1992), Stillman <i>et al.</i> (2006), Barrett <i>et al.</i> (2011)</p>
<i>Institutional level</i>	<p><i>Challenges related to HRCS programming:</i></p> <ul style="list-style-type: none"> ● Depending on HRCS project design, potential for the inequitable division of roles (locus of control) and benefits between Northern and Southern partners in HRCS initiatives; expertise assumed to fall with Northern partner ● Differing ethical standards; need for strengthening ethical review capacity ● Varying institutional perspectives on authorship practices ● Differing priorities between HRCS initiative and priorities of partnering institutions ● Inconsistent commitment to HRCS initiative due to a change in leadership in either institution ● Limited consensus on and implementation of systematic evaluations of HRCS initiatives; limited validation of HRCS methodologies 	<p>Trostle (1992), Costello and Zumla (2000), Chandiwana and Ornbjerg (2003), Jentsch and Pilley (2003), Lansang and Dennis (2004), Mayhew (2008), Boshoff (2009), Barrett <i>et al.</i> (2011), Laabes <i>et al.</i> (2011), Nurse and Wight (2011)</p> <p>Edejer (1999), McIntosh <i>et al.</i> (2008), Barrett <i>et al.</i> (2011))</p> <p>Maina-Ahlberg <i>et al.</i> (1997)</p> <p>Brown and Gaventa (2010), Barrett <i>et al.</i> (2011)</p> <p>Authors' observation</p>

Table 1 (Continued)

Level	HRCS challenges	References
	<i>Broader challenges to southern research agendas:</i>	
	<ul style="list-style-type: none"> ● Low remuneration in academic research positions in Southern institutions; recruitment of skilled researchers by competing organisations where independent research is rarely conducted or for consultancies 	Trostle (1992), Costello (2005), Gadsby (2010), Nurse and Wight (2011)
	<ul style="list-style-type: none"> ● Varying pathways to career advancement in Northern and Southern partner institutions; lack of a career scientist system in the Southern context; non-merit considerations in promotions 	Trostle (1992), Maina-Ahlberg <i>et al.</i> (1997), Nchinda (2002), Lansang and Dennis (2004), Andrushow (2005), Mayhew (2008), Wight (2008), Nurse and Wight (2011), Oni <i>et al.</i> (2011)
	<ul style="list-style-type: none"> ● Faculty with no or limited access to course buyouts from teaching commitments in Southern institutions; limited pool of adjunct faculty available to fill teaching positions 	Trostle and Simon (1992), Nchinda (2002), Lansang and Dennis (2004)
	<ul style="list-style-type: none"> ● Limited access to sustainable mentorship within Southern institutions and lack of senior scholars to support future funding applications; long-distance mentorship difficult to sustain 	Authors' observation
	<ul style="list-style-type: none"> ● Limited experience with horizontal collaboration in Southern institutions 	Trostle and Simon (1992), Nchinda (2002), Hyder <i>et al.</i> (2003), Brooks and Monirith (2010)
	<ul style="list-style-type: none"> ● Lack of a critical mass of investigators in Southern institution to undertake new research projects that develop through the HRCS initiative 	Wight (2008)
	<ul style="list-style-type: none"> ● Limited access to Internet and scientific literature in Southern institutions (sometimes a national problem) 	Authors' observation
	<ul style="list-style-type: none"> ● Limited infrastructure for research administration and financial management in Southern institutions 	Marshall-Lucette <i>et al.</i> (2007), Ghaffar <i>et al.</i> (2008)
		Trostle and Simon (1992), Maina-Ahlberg <i>et al.</i> (1997)
<i>Macro level</i>	<ul style="list-style-type: none"> ● Limited demand for research by potential users (policy-makers and practitioners) in the Southern context; limited interaction between researchers, policy-makers and practitioners 	Trostle and Simon (1992), Lansang and Dennis (2004), Ghaffar <i>et al.</i> (2008)

Table 1 (Continued)

Level	HRCS challenges	References
	<ul style="list-style-type: none"> ● Limited national political commitment to health research funding in the Southern context, which threatens sustainability of HRCS programmes; dependence on international funding ● Research agenda in the Southern institutions vulnerable to international funding agency priorities ● Limited access for Southern institutions to permanent core funding and indirect funding via international grant mechanisms (funds consequently diverted from research to cover facilities costs) ● Researchers in Southern countries compete for international funds against Northern researchers who have more access to tools, training, and guidance ● Insecurity; political or economic instability at the national level; funding disrupted by unstable currencies and conversion rates globally ● Challenges regarding the retention of trained scientists ('brain drain') in Southern institutions 	<p>Costello and Zumla (2000), Hyder <i>et al.</i> (2003), Ochola <i>et al.</i> (2009), Whitworth <i>et al.</i> (2010), Oni <i>et al.</i> (2011)</p> <p>Andruchow (2005), Ghaffar <i>et al.</i> (2008)</p> <p>Trostle and Simon (1992), Ghaffar <i>et al.</i> (2008)</p> <p>Andruchow (2005)</p> <p>Nchinda (2002), Maziak <i>et al.</i> (2004), Marshall-Lucette <i>et al.</i> (2007), Airhihenbuwa <i>et al.</i> (2011)</p> <p>Trostle (1992), Nchinda (2002), Pang <i>et al.</i> (2002), Hyder <i>et al.</i> (2003), Lazarus <i>et al.</i> (2010)</p>

that proved salient at our mid-course grantee meeting (based on the observations of the second author, who attended the meeting and a review of notes from the proceedings compiled by a note taker). In Table 2, we provide a summary of pertinent recommendations, drawn from the literature and our own experience, relevant to these challenges.

The literature which we drew on was identified through a search of the Medline and PsychInfo databases for articles published between January 1990 and June 2011 that referenced 'research capacity'. The bibliographies of these articles were also reviewed to identify relevant studies not returned by our initial search. The majority of the articles returned were case reports, while a limited number of articles critically examined the field of HRCS. Our review also drew on the burgeoning grey literature on HRCS, although limited to those documents frequently cited in the peer-reviewed literature. The grey literature available on the topic has chiefly been authored by representatives of the major HRCS donor agencies and several key interest groups. Importantly, we acknowledge that our review was drawn principally on a Northern literature, accessible through the aforementioned databases, which represents a limitation to our perspective.

The major challenges to HRCS initiatives that emerge from our reading and experience can be organised into three distinct but intertwined levels: the interpersonal level, the institutional level and the macro level. Missing from this literature, however, is sufficient reflexivity about some of the unquestioned assumptions built into HRCS programmes funded by the global North and intended to address HRCS in the global South, and so following this review we raise some broader, even beyond macro-level issues that are relevant for critical consideration of the HRCS enterprise.

Interpersonal level

At the interpersonal level, our own experience echoed a point made frequently in published work: the success of HRCS initiatives depends on sustained trust and the interpersonal compatibility of collaborating North–South partners (Lansang and Dennis 2004, Mayhew 2008). While this may seem a fairly obvious point, it is worth making because of the potential for conflict caused by the cross-cultural nature of the relationship. Language competency and culturally variable communication styles can complicate the collaboration if not carefully managed (Maina-Ahlberg *et al.* 1997, Stillman *et al.* 2006, Marshall-Lucette *et al.* 2007, Mayhew 2008, Air-ihienbuwa *et al.* 2011). Furthermore, the existing literature cautions (and we think with good reason) that the collaborating partners may not only share common goals related to the HRCS initiative, but that each partner brings to the table an array of personal priorities, long-term research goals and particular expertise (Mayhew 2008), as well as culturally dependent expectations regarding appropriate training and mentoring styles (Marshall-Lucette *et al.* 2007). Partners should be aware of and work to identify such differences so that they may be negotiated openly during the design and implementation of the HRCS initiative.

Table 2. Recommendations for health research capacity strengthening programme design and implementation.

Level	Recommendations	Sources
<i>Interpersonal management in HRCS</i>	<ul style="list-style-type: none"> ● Articulation and reconciliation of vision between HRCS partners 	Brown and Gaventa (2010), Airhihenbuwa <i>et al.</i> (2011); Oni <i>et al.</i> (2011)
	<ul style="list-style-type: none"> ● Reciprocal learning and respect between HRCS partners 	Reddy <i>et al.</i> (2002), Nchinda (2002), Chandiwana and Ornbjerg (2003); Airhihenbuwa <i>et al.</i> (2011)
	<ul style="list-style-type: none"> ● Collective decision-making at all stages of the HRCS and research processes 	Reddy <i>et al.</i> (2002), Airhihenbuwa <i>et al.</i> (2011)
	<ul style="list-style-type: none"> ● Trust evidenced through action, including funds management processes 	Reddy <i>et al.</i> (2002), Airhihenbuwa <i>et al.</i> (2011)
	<ul style="list-style-type: none"> ● Drafting of formal memorandums of understanding, such as authorship agreements 	Airhihenbuwa <i>et al.</i> (2011)
<i>HRCS programme management</i>	<ul style="list-style-type: none"> ● Undertaking a collaborative initial systematic needs assessment 	Nchinda (2002), Bates <i>et al.</i> (2006)
	<ul style="list-style-type: none"> ● Confirmation of formal support by authorities of HRCS partnering institutions; provision of in-kind support from Southern institution 	Reddy <i>et al.</i> (2002)
	<ul style="list-style-type: none"> ● Establishment of advisory committees for involvement of policy-makers & other stakeholders at all stages of HRCS & research 	Nchinda (2002), Goto <i>et al.</i> (2010), Oni <i>et al.</i> (2011)
	<ul style="list-style-type: none"> ● Applied training (e.g. establish a small research grant and provide training at each stage from proposal development through data analysis for funded research teams); Provision of training in proposal development, in addition to theory and methods. 	Andruchow (2005)
	<ul style="list-style-type: none"> ● Protection of researchers from overburden of administrative tasks 	Chandiwana and Ornbjerg (2003)
	<ul style="list-style-type: none"> ● Incorporation of former trainees as mentors in long-term programmes to increase programme ownership and sustainability 	Goto <i>et al.</i> (2010)

Table 2 (Continued)

Level	Recommendations	Sources
<i>Institutional reforms</i>	<ul style="list-style-type: none"> ● Flexibility and adaptation ● Systematic evaluation (process and outcome) ● HRCS initiatives should be designed as long-term endeavours 	Chandiwana and Ornbjerg (2003) Nchinda (2002), Goto <i>et al.</i> (2010) Chandiwana and Ornbjerg (2003)
	<ul style="list-style-type: none"> ● Advocacy for the development of a research infrastructure, including administrative mentoring ● Facilitation of institutional dialogue in support of a revision of reward structures that would support research ● Development and implementation of targeted and innovative research dissemination strategies aimed at diverse stakeholders ● Creation of departmental mentorship programmes and outside partnerships, networks and regional systems of collaboration; intellectual match-making across communities 	Trostle (1992), Chandiwana and Ornbjerg (2003), Lansang and Dennis (2004), Andruchow (2005) Council on Health Research for Development (2012) Trostle (1992), Lairumbi <i>et al.</i> (2008), Lazarus <i>et al.</i> (2010) Wight (2008), Brown and Gaventa (2010), Airhihenbuwa <i>et al.</i> (2011)
<i>Macro-level reforms</i>	<ul style="list-style-type: none"> ● Advocacy in support of the revision of international funding agencies' policies relevant to HRCS grants to enable more equitable partnerships 	Authors' observation
	<ul style="list-style-type: none"> ● Advocacy in support of the development of competitive grant funding at the national level in the Southern context and increased budget allocation for research 	Andruchow (2005), Ochola <i>et al.</i> (2009), Whitworth <i>et al.</i> (2010)), Zumla <i>et al.</i> (2010)
	<ul style="list-style-type: none"> ● Advocacy for a revision of legislative frameworks to better support research 	Whitworth <i>et al.</i> (2010)

Institutional level

The majority of the challenges identified in the existing literature as threats to the successful implementation of HRCS initiatives, as well as to the broader development of independent research agendas by Southern investigators, are consequences of the institutional context. This includes both the institutional organisation of the HRCS initiative itself and the broader institutional context in which it is located.

Creating a capacity strengthening partnership that will foster an equal division of roles, power and benefits between the Northern and Southern partners is a challenge amply documented in the literature on this topic. Many authors (including Trostle 1992, Costello and Zumla 2000, Chandiwana and Ornbjerg 2003, Jentsch and Pilley 2003, Lansang and Dennis 2004, Mayhew 2008, Boshoff 2009, Barrett *et al.* 2011, Laabes *et al.* 2011, Nurse and Wight 2011) have acknowledged how difficult it is to establish an equitable partnership, especially when one partner serves as mentor and the other as mentee and when the partnership bridges a North–South divide. Some have recommended that this critical division of labour, power and benefits across collaborating partners be negotiated in advance and formalised in writing as part of the HRCS programme design. Others argue that regardless of good intentions and formal commitments, when the Northern partner serves as the primary grant recipient (and the Southern partner is subcontracted), a level of inequality is created that is difficult to overcome, no matter what provisions are made to make decisions equitably. In response to this challenge, some of the leaders of the projects funded with ours through the NIH programme described above have chosen the Southern institution as the primary grantee organisation, with the idea that this alternative institutional structure may represent one route towards improved power sharing. Notably, however, this alternative structure is not permitted under the terms of many HRSC grants.

The implementation of pilot research with trainees was complicated in the experience of some of our fellow grantees because of the differences in institutional capacity for, and commitment to, US mandated practices regarding human subjects' protection. This required strengthening of the institutional ethical review capacity in some Southern institutions, and with regard to these efforts some of our fellow grantees echoed concerns evident in the literature regarding the problematic reality that the Southern ethical review boards are often asked to adopt practices developed for Northern contexts (Maina-Ahlberg *et al.* 1997, Edejer, 1999, McIntosh *et al.*, 2008, Barrett *et al.* 2011).

Another topic raised by those writing about HRCS initiatives is that of the challenges created by changes in institutional leadership. Even in the absence of a major change in leadership, Brown and Gaventa (2010) caution that across the course of an HRCS project's implementation, institutional priorities within partnering institutions may begin to increasingly differ. One option is to actively acknowledge this potential for institutional change and to build into HRCS activities and goals some opportunities for reorientation and adaptation.

There is also limited consensus on and precedence for systematic evaluations of HRCS initiatives, making it difficult to establish a clear benchmarks for success (see for example Trostle 1992, Simon 2000, Costello 2005, Cooke 2005, Gadsby 2010, Nurse and Wight 2011). In line with several of our fellow grantees, we have relied on outputs including competitive grants awarded to our trainees and publications.

Regarding publications, authorship is another aspect that merits explicit planning during the development of an HRCS initiative with respect to data sharing across institutions, expectations regarding the level and type of contribution that merit authorship and the decision-making process in terms of the order of authors (Maina-Ahlberg *et al.* 1997). We recommend the early drafting of an authorship agreement.

Looking beyond the context of HRCS initiatives themselves to the broader institutional landscape in which they are nested, one critical challenge described in the existing literature (Trostle and Simon 1992, Maina-Ahlberg *et al.* 1997, Nchinda 2002, Lansang and Dennis 2004, Andruchow 2005, Mayhew 2008, Wight 2008, Nurse and Wight 2011, Oni *et al.*, 2011) and echoed by the leaders of many projects in our group, is that insufficient remuneration for academic positions in Southern universities can facilitate the recruitment of academics away from independent research programmes to higher paying NGOs or consultancies, where research is typically donor-driven and is often focused on programme evaluation. In this way, promising research agendas, which HRCS initiatives attempt to support, are frequently derailed by the lure of higher paying consultancies. Compounding the issue of remuneration, in some Southern universities research is sometimes not otherwise incentivised – instead, other criteria determine career advancement, and typically there is limited or no access to buyouts from teaching commitments if funding for research is obtained (Trostle and Simon 1992, Nchinda 2002, Lansang and Dennis 2004). Senior scholars, whose career advancement did not require research expertise, are often not well equipped to provide guidance to junior scholars pursuing research (Trostle and Simon 1992, Nchinda 2002, Hyder *et al.* 2003, Brooks and Monirith 2010), and they may even find the notion of shifting incentive structures threatening in terms of how it might call their own authority and prestige into question. A legacy of collaboration between colleagues who are at the same stage of their careers may also be limited (Wight 2008).

Finally, our experience and that of our fellow grantees confirmed the significance of barriers cited in the literature associated with inadequate material research infrastructure in many Southern institutions, including inadequate access to the Internet, to scientific literature and financial management personnel (Trostle and Simon 1992, Maina-Ahlberg *et al.* 1997, Marshall-Lucette *et al.* 2007, Ghaffar *et al.* 2008). Certainly the extent of such barriers varies widely across the global South, and these barriers are sometimes reflective of limitations that exceed the bounds of the institution itself, as is the case with Internet access in regions where coverage remains limited. In other cases, differential commercial pricing (i.e. comparatively higher retail pricing in some Southern regions) of basic research equipment may limit access to equipment in those regions (van Helden 2012). Importantly, as several authors have noted (Trostle and Simon 1992, Ghaffar *et al.* 2008, van Helden 2012), these infrastructural challenges are exacerbated by the fact that research grants from international funders often limit or do not provide funding for overhead costs for grantees in low- and middle-income countries. Indeed, the NIH currently limits funding for such costs to just 8% of budgets for international institutions, while a rate around seven times that is typically negotiated by US-based institutions, such as our own university. Notably, in Vietnam, the first activities aiming to strengthen administrative grant offices at HMU and Ho Chi Minh University of Medicine and Pharmacy began only recently in the wake of two decades of support for doctoral training for individual faculty members.

Macro level

As we have observed in the section above, a significant portion of the institutional conditions within HRCS programmes themselves and to an extent the institutional conditions in which these programmes are nested are linked to policies set forth by the international agencies that fund HRCS programmes. For these conditions to improve, key modifications are required with regard to funding procedures, and HRCS practitioners, we believe, have a responsibility to advocate for such reforms. Alternatively, to stem reliance on international grants, Southern countries might make available or increase funding streams for HRCS to afford Southern research institutions real power in their partnerships with Northern collaborators. A third alternative lies with the newly launched development banks of the BRIC countries (Brazil, Russia, India, China and South Africa) that may be able to provide South–South research funding (Council on Health Research and Development 2012).

Though governments in a number of countries, including Brazil, India, China, South Africa, South Korea and Turkey, have made new and significant financial commitments to health research, in many low- and middle-income countries, domestic funding for health research remains inadequate (Lansang and Dennis 2004, Burke and Matlin 2008). Much of this inability to fund health research are attributable to deep-seeded economic realities stemming from colonial histories, twentieth-century structural adjustment policies and the like. Some authors, though, have suggested that the lack of domestic funding commitment in many countries is also at least in part linked to limited demand among government authorities for the scientific evidence that health research would produce (Trostle and Simon 1992, Lansang and Dennis 2004, D'souza and Sadana 2006, Ghaffar *et al.* 2008), which may be further reflected in the absence in these contexts of a national health research agenda or mechanism to coordinate research activities (D'souza and Sadana 2006).

Ultimately, reliance on international agencies for health research funding positions international funding institutions to influence profoundly many Southern research agendas (Costello and Zumla 2000, Hyder *et al.* 2003, Andruchow 2005, Ghaffar *et al.* 2008, Ochola *et al.* 2009, Whitworth *et al.* 2010, Oni *et al.* 2011). The lack of adequate domestic funding in many Southern contexts also raises questions about the capacity of institutions in these areas to retain trained scientists over the long term, who may migrate to the global North where they feel they can more easily access support, a process widely referred to as 'brain drain' (Trostle 1992, Nchinda 2002, Pang *et al.* 2002, Hyder *et al.* 2003, Lazarus *et al.* 2010).

Reconsidering the enterprise: new critical perspectives on research capacity strengthening

While the challenges identified above are significant, our experience suggests that there are some even more fundamental challenges to HRCS – challenges that arise from the social and economic organisation of public health itself, as well as challenges that arise from generally unarticulated assumptions that undergird research capacity strengthening as an enterprise. Overall, our discussion of further challenges to research capacity strengthening serves as an argument for a deeper consideration of the larger social context of science and knowledge production with regard to HRCS. We are not arguing that research capacity strengthening is

inherently a doomed enterprise, but only that – like all other areas of public health – it is a social as well as scientific intervention, and therefore merits consideration in terms of the unexamined assumptions on which it rests and unintended consequences it can have.

US funding streams and the ecology of knowledge production

Earlier we emphasised the fact that national governments in many low- and middle-income countries, with important exceptions, do not adequately fund or consume health research (Burke and Matlin 2008). This leads to a dearth of funding to support academic research, and at the same time the good salaries that researchers can earn working at NGOs and as consultants represent a powerful pull factor, tempting scientists away from the academy. With this in mind, it is critical to examine more closely the organisation of public health funding in contexts marked by this reality to understand how and why NGOs and consultancies wield such economic strength, as well as this arrangement's implications for knowledge production and for HRCS.

In Vietnam, we saw the way in which two competing US funding streams contribute to this situation. While one funding stream fuels this pull of talented academics away from Southern university systems, another funnels millions of dollars towards capacity strengthening programmes (the NIH's Fogarty International Center alone funds some 400 projects globally, two-thirds of which provide support for training research scientists and capacity strengthening in global health) (John E. Fogarty International Center 2008). In short, US funding has underwritten HRCS projects worldwide with the potential to help shift the global power dynamics of health-related knowledge production, while other US initiatives have ironically and simultaneously limited the feasibility of independent scholarship.

This tension was particularly evident for us in the Vietnamese context with reference to HIV programming. We refer here to US-funded global health programmes, specifically of the United States Agency for International Development (USAID) and the President's Emergency Plan for AIDS Relief (PEPFAR), which aim to provide care and treatment for individuals living with HIV and AIDS, and the unintentional impacts or externalities for the ecology of knowledge production that these programmes produce. Namely, US-funded health service improvement projects need information, not research; their mission is to adapt programmes to fit the local context, not to support the development of enduring and generalisable knowledge. Stepping into the breach created by the limited incentives within academia to pursue research, this funding funnelled through local non-governmental organisations (NGOs) and consultancies, creates a reward structure in which internationally trained local researchers become the consummate 'flexible labour supply'. Despite a language of co-production (Callon 1999), programme research here is a hierarchical practice, with questions and instruments developed in Washington or New York and data frequently translated back into English for analysis by professionals with little sense of the local context. In our experience, senior staff members at PEPFAR-funded NGOs were quick to mention Vietnam's human resource limitations, but seemed unaware of the role of their own

sector in drawing investigators who might be training the next generation of researchers away from the academic positions.

Examining the draw of academic researchers away from the academy and towards NGOs and consultancies in East Africa, Wight (2008) makes a series of recommendations aimed at ameliorating this situation targeted at African state and university authorities. Most notably, he explores the possibility of instituting a requirement that all consultancies be funnelled through universities and that such consultancies include substantial funds earmarked for indirect costs to support the broader university-based research environment. We, in turn, emphasise here the underlying funding stream in order to demonstrate that this problematic also represents a practical dilemma for the US as a donor nation. By no means do we mean to imply that US investments in capacity building should be reconsidered, nor do we mean to suggest that programmatic funding for HIV prevention, care and treatment is inappropriate. What we do suggest is that it makes good short- and long-term fiscal sense for US funding authorities and agency leadership to also problem solve with local government and university authorities in order to prevent an academic brain drain. Institutions including NIH, PEPFAR and USAID, as well as the entities they comprise, must grapple with how to both achieve their individual goals and establish synergy between their efforts.

It is important to acknowledge that some activities have been implemented in Vietnam under the PEPFAR reauthorisation to strengthen local academic institutions. However, this has reflected the agency's goal of transferring programmatic activities to local institutions. Such capacity building activities include collaboration between the Centers for Disease Control (CDC), Fogarty International Center/National Institutes of Health and the University of California to provide Fogarty fellows from Vietnam with short courses on biostatistics, epidemiology, research methods and proposal development. Also, cooperative agreements between CDC and universities in Vietnam have provided training relevant to programme evaluation and human resources concerns. While these are welcome efforts, they do not address the fundamental shortcomings of local institutions regarding their ability to build sustained research infrastructures that would support the kind of research enterprise often seen in Northern institutions.

Furthermore, the draw away from the academy that US-funded consultancies represent for some Southern scientists should be understood in the broader context of international knowledge production. The particular political economy of knowledge production to which these funding streams contribute not only permits control over Southern research agendas by Northern institutions, but it also threatens more generally the sustainability of a university-based system of independent science in some Southern contexts. While beyond the scope of this essay, a comparative study of the ways in which an important minority of countries have largely resisted such influence, including Brazil and India (Adams and King 2009, Adams *et al.* 2009), while others have not, is also merited.

Research lost in translation

The widespread funding of HRCS initiatives is based on the notion that place-specific evidence and expertise is critical for the development of effective responses to

public health burdens. Underpinning this notion is the assumption that research findings can and will be translated into policies and programmes that have the potential to improve health at the population level. This research-to-policy translation requires that the producers of health knowledge and the users of knowledge (i.e. policy-makers and other health authorities) value research findings as relevant to policy decisions, understand this transfer of knowledge as part of their personal role, and are able to communicate effectively with each other (Brownson *et al.* 2009). Indeed, these assumptions were made explicit in the Request for Applications (RFA) that funded our project, which specifically mandated that one of our central objectives be to support the development of a research programme that would influence the HIV policy in the country where we work.

But to what extent are US investigators well equipped to mentor investigators abroad towards successful research-to-policy translation? It is certain that advances in the field of public health have seen substantial incorporation into policy over the course of the twentieth century in the USA, from the fluoridation of drinking water, to tobacco restrictions and seat belt laws (Centers for Disease Control and Prevention 1999). Yet it is certain, too, that concrete scientific evidence relevant to many additional public health issues has not led to policy change, as the voices (and research findings) of US academics compete with a chorus of interests, and often not so successfully, at the various stages of the policy-making process (Davis and Howden-Chapman 1996, Lavis *et al.* 2002, Hanney *et al.* 2003, Rychetnik and Wise 2004, Brownson *et al.* 2009). This reality is evident in US federal, state and local public health policies on issues ranging from needle exchange to school-based sexual health education, and includes international programmes as well, such as PEPFAR's inclusion of abstinence promotion among the core tenets of international HIV prevention efforts.

The current state of affairs in public health research-to-policy translation reflects the reward structure of American universities, in addition to the vagaries of politics. The ultimate expression of what is valued by our academic institutions, most criteria for tenure and promotion, even within schools of public health, places little weight on policy impact. Our institutional structure does not demand it, so arguably few of us really understand 'the game' of policy-making, as Macintyre (2012) calls it. Indeed, in a comprehensive review of this issue, Jacobson and colleagues (2004) recommend that in Northern contexts research produced in the university setting would be more likely to impact policy should a number of organisational reforms be implemented, including the revision of tenure guidelines, the availability of funding for knowledge-transfer activities, the appointment of offices or administrators to oversee knowledge transfer, and the documentation and dissemination of successful knowledge transfer activities – in short, Jacobson and colleagues present a framework for research translation capacity strengthening in *Northern* institutions.

It was eye-opening for us when our Vietnamese collaborators voiced frustrations following manuscript development workshops designed to train mentees to produce scholarly papers fit for publication in English-language international journals. They responded that our style of academic writing, while useful for this type of publication, is not the kind of direct, compelling and colloquial writing that will speak to policy-makers in Vietnam. While we had collectively decided that publication in international journals would be a training priority, our trainees' comments prompted us to reconsider whether this would offer the highest returns on

our investment of time and resources. We also questioned whether we were equipped to provide training in the style of communication that mentees would need to produce publications relevant to local policy-makers. In hindsight, we recommend that leaders of similar HRCS initiatives seek out investigators in the local context who have had tangible success influencing health policy and invite their participation in the design and implementation of the HRCS project. Ultimately, we are compelled to proceed humbly, acknowledging that we may stand to learn more from our mentees than they from us in the area of policy translation and that an HRCS initiative must provide Southern collaborators the opportunity to approach translation drawing on what they know to be effective in their local context.

Passing on US research and intervention paradigms

The humility with which Northern partners must approach HRCS initiatives is further evident with regard to the potential that such initiatives represent for uncritical transfers of Northern intervention and research paradigms. This represents a third issue that, we believe, is underdiscussed in the HRCS literature to date. In the USA and beyond, a shift in paradigm has begun as public health researchers and practitioners grapple with how best to apply across the field lessons drawn primarily from decades of struggle to confront the HIV epidemic. As Hankins and De Zaluondo (2010) have observed with regard to HIV, individually focused behavioural change interventions are now widely recognised as inadequate, while the societal conditions that undermine people's ability to act healthfully have increasingly become our priority. Yet, US researchers and practitioners concerned with HIV, as well as a broad range of other infectious and chronic diseases, have been hard pressed to shift academic public health away from behaviour change strategies and towards structural interventions that would address the social drivers of disease, especially as such interventions require major changes in law, policy, procedures or complex social processes and interdisciplinary expertise and collaboration (Parker *et al* 2000, Blankenship *et al.* 2006). Although the theoretical paradigm may have shifted, practice has largely remained the same, evidenced by an arsenal of short-term individual-level behaviour change intervention projects (Trickett *et al.* 2011). A generation of investigators trained in behavioural science approaches to HIV would need significant methodological and theoretical retooling in order to actually incorporate structural perspectives into their research and programme development.

Our objective here is not to suggest that our incomplete paradigm shift towards a structural approach renders us unprepared to collaborate in an HRCS initiative, but instead to remind readers that such collaborations require us to be reflexive about our own epistemological position. For example, there is clear reluctance to regard health as a social good and the possibilities for structural interventions are highly contested in the USA today, with a prevalent neoliberal worldview that colours both scientific imagination and programmatic visions of the possible. Yet in the regions where we collaborate on HRCS initiatives, this individualistic bias may not complicate structural interventions to the same extent. In training mentees across the global South, US-based academics must strive not to impose their own cultural and epistemological limitations, but instead encourage mentees to evaluate and push the bounds of what is locally possible.

Conclusion

While our review of existing HRCS literature revealed that decades of experience with HRCS has given rise to a rich body of evidence detailing the challenges complicating the enterprise on a practical level, our experience and the comments of our fellow grantees indicate that there are additional meta-level concerns that remain underarticulated in the literature, which we have begun to explore in the second half of this essay. In Table 3, we summarise our analysis.

Ultimately, underlying these themes, we believe, is the simple notion that success in HRCS initiatives is dependent on the humility with which especially Northern partners approach the enterprise, not simply the research expertise they offer. We emphasise here mainly the importance of humility, both in relation to epistemologies and in relation to practice in day-to-day HRCS operations. This humility, we add, is fundamentally linked to what we might call a moral philosophy of solidarity (Rorty 1989, Parker 1996), which in the current context of HRCS helps us to blur the boundaries of ‘North’ and ‘South’, ‘mentor’ and ‘mentee’, and ‘us’ and ‘them’, in recognition of the shared nature of human suffering and our shared global responsibility to address it. From this perspective, we conceive of HRCS not simply as the transfer of skills across borders or the improvement of research infrastructure, but instead as a critical component of a global and collective struggle for health and well-being in which we (mentors and mentees) are partners.

Equally as important, as we have attempted to emphasise throughout this paper, is a deep consideration of the web of institutional structures, marked by their own particular histories, which influence efforts to strengthen research capacity. These include the structure of the HRCS initiative itself, the organisation of the collaborating universities, the political economy of health research and health care in both the Northern and Southern settings, and the organisation of international health-related funding streams. Change is possible at each of these institutional

Table 3. Reconsidering the enterprise: new critical reflections on health research capacity strengthening.

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1. *The organisation of US public health funding:*
How might HIV programming (under PEPFAR and USAID) and the research capacity strengthening initiatives (funded under the NIH) achieve their individual goals and establish synergy between their efforts with regard to a sustainable local ecology of knowledge production?
 2. *Research to policy translation:*
Are US researchers prepared to partner with Southern institutions for research to policy translation capacity strengthening? While reward structures and additional institutional structures within US universities do not reflect translation as a priority, US researchers are likely to have difficulty building translation skills.
 3. *Reflexivity & humility:*
Partners must consider the potential that research capacity strengthening represents for uncritical transfers of Northern institutional, research, and intervention paradigms. We highlight, as an example, the individual-behavioural approach to public health promotion that has predominated in US public health for decades.
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levels, and it is central to the task of HRCS practitioners to identify, document, disseminate and work towards improvements at each level moving forward.

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