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Enabling connections between a multi-country urban research programme and the practices of an African urban research centre

Andrew Tucker [1] ✉

Significant interest exists within urban scholarship regarding both the need to explore diverse urban situated knowledge while enabling effective forms of global comparison, and the place and utility of new urban science approaches. This article considers such interests in relation to the implementation of a multi-country urban research programme and its interface with the pre-existing interests and methodological practices of an African urban research centre. It suggests, when partners engage dialectically, large-scale research programmes may speak to and help offer new perspectives on local realities as much as local realities may help enrich the frameworks of international large-scale research programmes.

INTRODUCTION

Scholarship has considered the challenge of acknowledging diverse urban situated knowledge while enabling effective comparison across urban sites[1,2]. At the same time, lively debate within urban scholarship has grappled with the utility (or otherwise) of urban science approaches, which have the potential to offer alternative and new ways of framing and predicting city futures, but which potentially gives primacy to heavily quantitative analysis and computational modelling to the detriment of other ways of knowing[3,4]. Less consideration, however, has been given regarding the combination of these two concerns with respect to the way they play out within large-scale multi-site research programmes that seek both analytical coherence from their inception and that draw on and indeed attempt to further urban science approaches.

What scholarship has cautioned against, however, is that multi-site programmes funded by global North agencies risk defining their methodologies and analytical approaches at the level of the overarching programme, rather than at the level of the country or city site. This presents the ethical dilemma of relegating research partners beyond metropolitan sites of relative privilege in the global North to lesser positions within projects[5–7]. In the context of urban science approaches, and in the context of large-scale multi-site research programmes, there also runs the risk of giving primacy to quantitative data-driven approaches which may struggle with applicability (or legitimacy or utility) in locations where data itself is lacking[8]. When combined, both risks could, at an extreme, undermine the analytical and conceptual gains generated over the past decades which have emerged via the acknowledgement of the need to appreciate situated knowledge as evidenced by the rise of southern urbanisms[9,10].

This article considers such concerns in relation to the UKRI-funded programme, PEAK Urban, and in relation to one of its key partners, the African Centre for Cities (ACC) at the University of Cape Town. The ACC, as has previously been documented, has its own bespoke research agenda and methodological practices rooted in the specifics of African urban problematics[11,12]. This article suggests that significant utility exists in exploring the implementation of large-scale multi-site research programmes as they interface with research centres such as the ACC with their own unique genealogies and mandates. By so doing, this article wishes to suggest that there can exist significant utility for large-scale multi-site research programmes, including those which attempt to push forward urban science approaches, if they operate dialectically with local partners—in other words, if conceptual and operational space is created to enable open and logical discussion of different ideas, perspectives, and approaches among partners. Here it becomes important to appreciate both how the aims of an overarching large-scale multi-site research programme can help productively inform and support how global South country partners go about undertaking and situating their research work, while also acknowledging how local country partners can help shape, inform, and add unique value to the overarching direction of large-scale multi-site programmes. An appreciation of the implementation of such a dialectical approach (as opposed to a didactic approach, which can involve a one-way and fixed transfer of knowledge or ideas) adds important degrees of nuance and directly speaks to and furthers existing scholarly concerns regarding the challenge of acknowledging diverse urban situated knowledge while enabling effective comparison across urban sites, and the potential efficacy of urban science approaches in diverse urban contexts.

This article begins by briefly summarising the PEAK Urban programme and its initial impetus to explore and extend urban science approaches in open and generative ways before exploring how ACC's practices to generate urban knowledge come from a particular genealogy tied to the specificity of African urbanism. The article then considers how ACC both drew upon the PEAK Urban urban science framework to further its own research mandate, and reconfigured it in light of the uniqueness of African urbanisation. To conclude, this article argues that a dialectical engagement between overarching frameworks and local urban South partners can, if properly implemented, provide significant utility both to overarching programmes and particular country partners. Here the article explores the efficacy of dialectical engagement in both operational structure and conceptual framings.

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[1]African Centre for Cities, University of Cape Town, Rondebosch, Cape Town, South Africa. ✉email: andrew.tucker@uct.ac.za

PEAK URBAN

PEAK Urban involved collaborators at the University of Oxford in the UK—including the Primary Investigator and central administrative hub for the programme—along with the Centre on Migration, Policy and Society (COMPASS), the Nuffield Department of Women's and Reproductive Health, a data analytics team, and the Transport Studies Unit at the Department of Geography. Beyond Oxford collaborators were: the Research Group in Spatial Economics (RISE) and the Centre for Urban and Environmental Studies (URBAM) at EAFIT University in Medellin in Colombia; the Indian Institute for Human Settlements (IIHS) in Bangalore in India; the Urban and Environmental Sciences team, Urban and Regional Planning team, and Population Research team at Peking University in Beijing in China; and the African Centre for Cities at the University of Cape Town in South Africa.

The overarching logic for the organization of the PEAK Urban programme was to start conceptualizing global urban processes and sustainable urban development in relation to four interconnected lenses related to city futures. These were "Prediction", "Emergence", "Adoption" and "Knowledge Exchange". While other work has gone into significantly more detail about the logics and rationales for these lenses[13] of importance for this article is the ways in which the programme as a whole attempted to frame an urban research agenda that both spoke to urban science approaches and the deployment of new technologies and also considered the potential trade-offs and incommensurabilities that could result. Indeed, here there was an explicit awareness that the PEAK framework should situate urban science within wider epistemic terrains.

> "PEAK Urban is a novel approach to urban studies that asserts that in an interdisciplinary inquiry into city futures it is essential to reconcile the sciences of prediction and projection with culturally sensitive readings of institutional architectures and urban contexts which will mediate specific technological disruptions. The former demands an understanding of rapidly growing expertise in the new urban sciences, the latter demands experimental and bespoke local engagements in city life…"[13]

PEAK Urban therefore conceptually pivoted around the importance of exploring the ways in which new technologies including those associated with urban science can help academics and practitioners to predict urban futures. This would then help scholars understand and also give framings to emergent urban forms. Equally important, however, would be the need to appreciate the diverse ways in which cities themselves—and especially urban residents and city officials—may find themselves adopting new technologies and new modalities of working tied to new forms of data to navigate and understand their cities. Lastly, in part because of new data sciences, the PEAK Urban programme also appreciated that there can a exist the possibility for forms of incommensurate knowledge about cities being generated and the necessity to look forwards forms of commensurability in light of potential trade-offs. The importance of finding points of commensurability, through for example knowledge exchange, therefore also formed a core component of the programme[13].

The PEAK Urban programme therefore, by taking as its starting point the validity of urban science as a new way of exploring and conceptualising new knowledge about cities then went on to consider how such knowledge actually 'lands', both in terms of how it informs our understanding of and goes to inform new forms of urbanism, and how the (productive) tensions between different types of urban knowledge and data could be acknowledged and possibly overcome[13]. In this sense, the PEAK Urban framework can be seen to have spoken to recent debates within urban scholarship about the place of urban science, not as a reductionist, universalising or totalising terrain, but as a set of tools that may have profound effects on how we come to comprehend cities and how they operate[14,15]. For the PEAK Urban framework as much attention was therefore placed at situating urban science within wider urban discourses, as it was about the furtherance of urban science itself[3].

For many of the PEAK Urban partners, this framework allowed for a wide range of scholarship that had as its connective tissue how urban science may or may not have utility in how residents and city planners come to comprehend, navigate, and imagine the future of their cities. Work from Colombia, for example, developed new quantitative indicators and applied them to open data on street networks and night-time light imagery to explore how city density has complex relationships with economic productivity[16]. In India, meanwhile, using population, satellite and land-use data, researchers were able to analyses pressing socio-economic inequalities in water use[17]. In China researchers deployed computer modelling to calculate future urban and rural land use drawing on data about urban growth boundaries and property rights[18]. These are but a few of the over forty projects that were created during the lifetime of PEAK Urban. In each instance local partners were asked to develop their own individual projects that spoke to the PEAK urban framework, rather than having projects or project methodologies being defined at the level of the overarching programme. These projects were then double peer reviewed by the PEAK Urban management board (made up of one or two members from each country site) to offer feedback and also draw attention to in-country scholars of potential connections across different projects in different country sites. To further strengthen connections across projects and across country sites, annual week-long residential 'retreats' were held sequentially in different country sites that brought together all researchers to share learnings and build potential future research collaborations. Monthly 'Work in Progress' or (WiPs) seminars were also held where developing research could be shared among PEAK Urban researchers.

Nevertheless, as projects got underway it soon became clear that one partner, the African Centre for Cities, was taking a different approach to the other country partners. As the next section of this article will explore, this was both due to the particularities of African urbanisation and, concurrently, the ways in which the ACC had traditionally gone about conducting urban research. This meant that the ACC's approach to the PEAK Urban framework required a form of rearticulation that then spoke back to the original aims of the framework in original ways.

PEAK URBAN AT THE ACC

The African Centre for Cities is an interdisciplinary hub at the University of Cape Town, whose research foci are infused with a degree of instrumentality[5]. This instrumentality acknowledges wide-ranging knowledge gaps about African urbanisation which must be addressed with a degree of urgency to enable effective and appropriate policy responses[9,11]. Such work is also rooted in southern urbanism and the need to counter framings of urban development which forefront formal (and often a-contextual) economic structures in urban development, or which assume urban theory from the global North is necessarily applicable elsewhere[10,19,20]. This work is also intent on filling gaps in, and expanding the scope by which we come to consider and value, situated and diverse urban knowledge via a form of translational urban research praxis[5]. Such praxis foregrounds face-to-face engagements between scholars with communities and governance officials at all stages of research, from design to execution, publication, and implementation. A core component of such praxis is the co-production of knowledge, via long term, in-depth engagement with urban citizens and governance officials to build

new knowledge products that have direct policy relevance and to enhance the capacity of a variety of urban change agents[10,21].

As a result of a multitude of large data and knowledge gaps with regard to African urbanisation, the ACC took a different approach with regard to the centrality of urban science to its engagement with the PEAK Urban framework. While there does exist the potential for big data to be effectively used in African contexts, there remains across the continent limited data, limited online repositories, and limited capacity to engage with new data science and big data approaches, especially in and by cities[8,22]. The lack of sub-national data and the disaggregation of data at a scale that would allow for the analysis of urban areas has also been noted as a key challenge[23].

For the ACC the priority was therefore not to wholly and solely embrace new data science methodologies, but instead to situate the limitations in being able to apply new data science methodologies in the generation of new knowledge alongside other diverse pressing knowledge gaps which, as outlined earlier, go to define the current state of African urban research. The intent here was both to explore what new perspectives regarding the ACC's pre-existing research interests may be made possible via consideration of the PEAK Urban framework, and to consider how the ACC's own pre-existing research interests may speak back to (and potentially extend) the PEAK Urban framework.

The ACC, therefore, deployed two strategies. The first was to engage with existing quantitative datasets, to identify and address key data gaps, and to seek new ways of sharing and integrating data across urban sectors that can then support the development of integrated urban data platforms. The establishment of such baseline data, it has been envisaged, will then allow in the future for effective longitudinal monitoring of patterns within cities to then also enable the prediction of future urban trends. This process was undertaken in relation to urban health, where the integration of data from a range of sectors, such as health, urban planning, education, and transport is viewed as a key step in being able to establish a baseline understanding of urban health within Cape Town, which in turn provided a practical example of how to address the need to undertake transdisciplinary research to data gathering and integration in a South African context[24]. This was also a process that aligned with the desire, as outlined earlier, of the ACC to support effective and appropriate policy responses. It was also a process that directly highlighted, within the PEAK Urban framework, the central challenge of being able to undertake new urban science methodologies in data scarce settings and the significant steps that need to be undertaken to achieve data fidelity. The second strategy was to focus on other methodological tools, such as ethnography and institutional analysis to explore city futures in Cape Town. A focus on these other methodologies then led to rearticulations as to how, within the PEAK Urban framework, scholarship could explore the emergence and adoption of new technologies and the implications of new forms of data in terms of knowledge exchange and co-production.

By way of example, in terms of new technologies, one of the ACC's projects explored the emergence and adoption of new technologies in relation to a long-standing area of focus for the ACC, that of migrant labour and the informal sector in Cape Town[25]. As previous scholarship by the ACC has highlighted, challenges faced by undocumented migrants in the informal economy in South African cities are significant, and are the result of larger-scale structural inequalities that often place documented migrants—and undocumented migrants in particular—in vulnerable socio-economic positions[26,27]. At the same time, however, and of interest here, undocumented migrants from countries such as the Democratic Republic of Congo must find ways of sending what money they can home (or when necessity dictates, to receive money from their home countries) which means stepping beyond the bounds of the formal regulated financial systems that are in place for those with

official identity documents. Via complex interlinkages between formal and informal practices (included coded text in ledgers, WhatsApp messages between Cape Town and the DRC to indicate monies should be released to recipients, and the use of official platforms such as Airtel Money Wallet to receive funds) informal migrants are able to bypass legacy systems such as Western Union and regulation by the state. When combined, the emergence of this new socio-technical 'fix' to move money quickly, easily – and perhaps most importantly – cheaply and with almost complete anonymity, across the continent was seen to have the potential to disrupt not only the hegemony of legacy systems but also our pre-existing conceptualisation as to what regulated financial institutions can mean and may mean in the face of technological change for the future for cities[25]. In addition, this work made the case not only that digital technologies are fundamental to our understanding of migrant infrastructures and their socio-material formations on the continent, but also – and just as importantly – that migrants themselves are a key and compositional part of these networked infrastructures.

In this example, ACC PEAK Urban researchers were able to simultaneously build on pre-existing research interests of the ACC such as that of migrant workers and the informal sector and in particular the concerns raised by the ACC with regard to a dearth of knowledge about diverse marginalised subjectivities within African cities, with the aims of the PEAK Urban programme (broadly defined) to examine the particularities of emergent forms of urbanism tied to technological change. Rather than start from the perspective of urban science and then explore its wider ramifications, implications, and limitations, the ACC's approach in this example started from its institutional history of long-term ethnographic research to explore in different ways how city infrastructures are adopting new socio-technological constellations to meet the needs of diverse urban subjects, and how migrants themselves, by using technologies in new ways, are a core component of these emergent infrastructures.

In another example, ACC researchers explored the implications for city officials as they attempt to grapple with diverse and complex data metrics which they are now increasingly being asked to collect, analyse, and (hopefully) use to support their decision-making. As scholarship on urban science has noted, a key motivator for a 'new science of cities' can be seen in the passage of transnational policy prescriptions including an urban Sustainable Development Goal[3]. Yet the actual implications for, and expectations of, cities to be able to effectively document a variety of data metrics effectively and efficiently, and the ways in which such processes align or do not align with pre-existing operational or political local City logics, have yet to be fully considered. Drawing on pre-existing interests within the ACC both on the SDGs[28,29] and to work collaboratively with city officials in the generation of new knowledge that has direct policy relevance via the embedding of a researcher at the City of Cape Town offices[21] another PEAK Urban ACC project explored the challenge at aligning pre-existing data collection with the very significant localised data collection requirements of the SDGs[30].

This example spoke to the utility of ACC's focus on translational urban praxis which requires surfacing moments of incommensurability tied often to different types of knowledge held by different actors and, by working closely with key urban change agents, exploring through co-production what possibilities exist for collaboration and commensuration[12]. The ACC's interest in translational urban praxis can therefore be seen as the very connection between PEAK Urban's focus on incommensurability and commensurability. Yet by engaging closely with city officials this work also complexified the PEAK Urban programme's aim to consider both incommensurability and commensurability through knowledge exchange. It did this by questioning the rigidity of a binary between commensurable and incommensurable knowledge. Research here highlighted that while different

forms of institutional knowledge and data collection directives do exist within the City of Cape Town, which can give legitimacy to different policy imperatives, this does not automatically imply trade-offs as imagined by the PEAK Urban framework or the search for and application of one model of overarching alignment. Instead, rather than assume an ultimate goal of unitary policy or data gathering alignment, this example instead showed the benefits of maintaining and furthering multiple positions simultaneously regarding a diversity of data collection and data target approaches. Urban resilience frameworks for the City of Cape Town, for example, at times align with the City's SDG localization data collection processes. However, they also at other times do not and instead can enable the City to engage more directly around questions regarding informality (especially the informal economy and informal transport systems which serve a large proportion of the city's residents) and indigenous knowledges which are not directly the focus of the SDGs but fundamental to the post-apartheid city[31].

DISCUSSION

As highlighted earlier, there remains significant interest and debate regarding the potentialities to explore diverse urban situated knowledges while also enabling effective comparison across urban sites. Equally, much debate has recently explored the potential (and potential pitfalls) of new urban science approaches within urban studies. This article has suggested that important insights can be gained with respect to these two areas of concern by considering the actual implementation of a large-scale multi-site research programme, that had at its core an interest in urban science, in relation to a research centre with its own particular approach to urban research rooted in its own local realities. This article has therefore argued that generative potentials are indeed possible when large-scale programmes and particular research centres engage dialectically with each other (in ways that foster dialogue and conceptual and operational space for shared decision-making), rather than didactically with each other (which can involve a one-way and fixed transfer of knowledge or ideas—potentially resulting in analytical and methodological approaches being 'imposed' on local country partners). Such a dialectical approach has the potential benefit of enriching both the aims of large-scale programmes and the research imperatives of local research centres, which in turn may both speak to global comparisons and the furtherance of situated knowledge.

For the PEAK Urban programme as a whole a dialectical mode of engagement with country partners can be seen to have emerged via the operational structure of the PEAK Urban programme, and via the conceptual space enabled by the PEAK Urban framework itself. In terms of operational structure, the PEAK Urban management board's composition meant that all country partners were given equal voice, for example in the review of projects, which also helped foster shared decision making. This, in turn, meant that the validity of the ACC's approach to the PEAK Urban framework—while in some ways distinctly different from other partners—was also given equal weighting to all other country approaches within the programme. Second, and linked to the first point, PEAK Urban's conceptual framework was broad enough to allow for a consideration both of the possible benefits of urban science approaches together with the challenges that can occur in their implementation and an equal interest in broader technological changes occurring in cities. This broad conceptual framework, while providing coherence to the global programme as a whole, meant (in conjunction with the programme's operational structure) that the ACC found generative outcomes in collaboration that both furthered existing research interests and offered new perspectives on such interests.

Specifically for the ACC, the engagement with the PEAK Urban programme allowed ACC researchers the ability to engage with and learn from new data science approaches (for example during the annual 'retreats' and 'WiPs' events) which had historically not formed a primary focus of the Centre. This, in turn, provided an opportunity to skill up ACC researchers on the particularities of new data science approaches. But just as importantly from the perspective of the ACC, the research projects that emerged from the PEAK Urban programme not only were able to speak to the overarching framework of the programme, they also drew on that framework—and at certain instances extended it—by applying it to the particularities of African urbanisation in the creation of new research. The ACC's work on urban health data sets directly highlighted the challenges—and also the possibilities—that exist in applying urban science approaches in resource constrained and data limited settings. Work on remittances added to PEAK Urban's interest in exploring emergent—and insurgent—technological innovations that may be just as important as data generated from urban science approaches for policy stakeholders. Work on data localisation for the SDGs took forward and offered an alternative framing of the distinction between commensurability and incommensurability of knowledges, highlighting instead the generative potential of harnessing different forms of knowledge rather than simply searching for trade-offs.

While space precludes exploration of the other ways in which ACC PEAK Urban research projects engaged with the PEAK Urban framework[32–36] this article has hopefully highlighted how at the level of operationalisation and conceptualisation, generative potentials in research are indeed possible that can speak both to local urban realities and wider global urban concerns. As such, an appreciation of, and reflection upon, the actual implementation of large-scale programmes may add important degrees of nuance and directly further existing scholarly concerns such as those related to appreciating diverse urban situated knowledges while enabling effective comparison across urban sites, and the potential efficacy of urban science approaches in diverse urban contexts.

A reflection on such implementation has shown that what is necessary, however, is that programmes are designed from the outset to enable substantive collaboration, and that country partners are willing to extend and think through how their existing research interests rooted in their own urban realities may speak to emergent fields and interests within urban studies. If successfully implemented, large-scale research programmes may speak to and help offer new perspectives on local realities as much as local realities may help enrich the frameworks of large-scale research programmes.

Reporting summary

Further information on research design is available in the Nature Portfolio Reporting Summary linked to this article.

DATA AVAILABILITY

Data sharing is not applicable to this article as no datasets were generated or analysed during the current study.

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