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ABSTRACT

Co-production is increasingly embraced as a means to combine forms of urban expertise to address complex and uncertain societal problems. Conventional city-regional intelligence processes rely on epistemic monocultures that prioritize certain forms of expertise over others. Co-production challenges dominant conceptualizations of city-regional intelligence through questioning what and whose knowledge matters. We suggest that the co-production of city-regional intelligence is a political epistemic practice comprised of strategies of intermediation and tactics of unsettling. We draw on experiences working in Cape Town (South Africa) and Greater Manchester (UK) to critically reflect on how different strategies and tactics can open up the concept of city-regional intelligence.

KEYWORDS

co-production; city-regional intelligence; Greater Manchester; Cape Town; platform; epistemology

INTRODUCTION

City-regional intelligence, aimed at understanding city-regions and contributing to evidence-based policymaking, has been bound up with the desire for global reputation and success in the capitalist knowledge economy (May & Perry, 2017). A dominant view of the relationship between knowledge and cities emphasizes an econo-centric perspective on cities' contributions to national wealth and competitiveness. Cities have generally thought about intelligence in a narrow way, reflected in the development of concepts such as 'city science'. City science refers to a diverse range of 'practices and orientations surrounding data collection, geospatial modelling, statistical analysis, and "smart cities"' (Duminy & Parnell, 2020, p. 649). There is a long history of scientific and data-driven approaches to understanding and governing cities, but city science has been reinvigorated by 'recent developments in how we understand, explain, and predict city processes using computational modelling and simulation; approaches linked to the increasing availability of big data and the refinement of techniques such as machine learning' (Duminy & Parnell, 2020, p. 650). The use of 'urban big data' is seen by its proponents as core to the related concepts of 'smart cities' and 'city intelligence' (Pan et al., 2016).

Data-focused approaches to understanding and managing cities have been criticized as limited. Critics argue, for instance, that the use of quantitative indicators, such as the Sustainable Development Goal (SDG) indicators, are reductionist analytical tools that oversimplify complex and contested contexts (Mair et al., 2017). A particular form of 'regional competitive intelligence' arises in the form of benchmarking between cities, which is of limited use in meaningful policy formulation (Huggins, 2010). Scholars have emphasized the need to diversify forms of knowledge in order to have a holistic understanding of cities and city-regions (e.g., Derudder & van Meeteren, 2019; Duminy & Parnell, 2020). There has been a growing shift to better understand 'how anticipatory intelligence and governance can be more systematically applied to help cities engage with their looming and complex realities' (Karuri-Sebina et al., 2016, p. 449).

Despite computational advances, state-of-the-art technological developments and complex data modelling, urban inequality is growing (Nijman & Wei, 2020). Against this background, the idea of co-production has gained in popularity as an alternative approach to the

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unbounding and remaking of city-regional intelligence. Co-production has been recognized as a way to integrate diverse sources of expertise to address complex and urgent societal challenges. At a spatial scale this means working across geographical, administrative, sectoral and disciplinary boundaries in 'extended peer communities' (Funtowicz & Ravetz, 1993), particularly given the variable geometries of subnational governance (Davoudi & Brooks, 2020). Co-production poses specific challenges to the conceptualization of city-regional intelligence, relating to questions of epistemic authority, governance and justice: put simply, whose and what knowledge matters? Such questions have led academics and city partners to search for new, innovative, experimental designs at the urban scale in which co-production processes and methods can be tested and developed. Yet the focus of such labs, observatories or platforms is often on design, methods and processes. Less attention has been accorded to the strategies and tactics deployed by academics to 'collectivise' (Ravetz, 2020) city-regional intelligence beyond narrow framings of experts and expertise.

In this paper we unbound and remake the concept of city-regional intelligence by drawing on examples from two co-production platforms in Cape Town (South Africa) and Greater Manchester (UK), which were part of the Mistra Urban Futures centre 2010–20.

The remainder of the paper is structured as follows. The next section sets out how the concept of co-production challenges the idea of city-regional intelligence and is embedded in novel city-regional governance experiments. We then analyse practices from across our two co-production platforms to identify strategies of intermediation (*strategic*, *relational* and *grounded*) and tactics of unsettling (*disruption, legitimation, displacement* and *emplacement*) deployed in both contexts. We next discuss the effectiveness of such practices and their strengths and limitations. Rather than present co-production as an unproblematic panacea, we critically analyse limitations, risks and dysfunctions to identify the 'hidden politics' of co-production (Flinders et al., 2016). Finally, we discuss how our analytical framework contributes to both intellectual understanding and practical action in realizing more just urban imaginaries – by repositioning co-production not as a method, but as a political practice for academics seeking to unsettle dominant knowledge claims.

We propose that this analytical framework is useful in understanding practices in a wide range of different contexts, and in learning how to adapt and implement them. We conclude that co-production is one way to open up strategic city-regional visions to more diverse expertise through challenging prevailing epistemic cultures; but it is also limited where there are fundamentally contradictory claims which resist integration and synthesis. Governance mechanisms are needed that can recognize and hold difference and tension, without eradicating them. We also highlight the importance of scientists, academics and designated 'experts' remaining reflexive in understanding their own roles – and the

politics involved – in the conceptualization, formulation and implementation of city-regional intelligence.

UNBOUNDING AND REMAKING CITY-REGIONAL INTELLIGENCE

Intelligence is not only about what is known, but the relationship between knowledge, capability and capacity to act. Co-production is widely seen by scholars and practitioners as a way to bring together stakeholders with different rationalities and types of knowledge to develop holistic understandings of problems and their potential solutions. Such initiatives are increasingly common in engaging local authorities and their communities to ensure more appropriate and legitimate service delivery (e.g., Mitlin, 2008), but also in research and knowledge production (Durose et al., 2020; Polk, 2015). Transdisciplinary and co-production approaches are problem oriented and based on real-world problems, and they address this complexity by involving a variety of researchers and other societal actors to generate normative and solution-oriented results relevant to both research and practice (Polk, 2015). Co-production poses three specific challenges to conceptualizations of city-regional intelligence – epistemic, procedural and distributive – to which numerous governance experiments have sought to respond, in the form of labs, hubs and platforms. We look at these challenges and responses below.

Epistemic, procedural and distributive challenges to city-regional intelligence

First, the increasing complexity of societal problems and 'wickedness' (Rittel & Webber, 1973) of urban sustainability issues in the context of the de-legitimation of authority and expertise is said to have led to the contextualization of science in society (Jasanoff, 2004; Nowotny et al., 2001). As boundaries are both blurred and contested, there is a need to recognize and integrate multiple forms and types of expertise. Co-production, involving the synergy and blending of these forms of expertise, poses a challenge to epistemic monocultures which rely on narrow and often technocratic forms of expertise. A focus on hard-science and technological solutions ignores lay expertise and grounded knowledge, tends to favour quantitative understandings and is often prospective and futuristic – seeing the past as a shackle to be shed in the rush for more productive outcomes, rather than a source of wisdom and historical understanding.

Second, there is a procedural challenge in how different forms of data and expertise can be integrated and governed. City-regions themselves are complex spatial imaginaries, which have variable levels of administrative relevance and affective resonance for the people living there. Urban scholars use the term 'city-regions' to refer to functionally interlinked areas, whether urban or rural, and the transition zones between them (Pillay, 2004; Tacoli, 2006). The governance of city-regions is usually complex and multilayered, with many governance actors

involved in a range of formal and informal decision-making processes. Governance institutions can be obdurate and difficult to manage, lacking the porosity and flexibility required to produce, identify and integrate different forms of expertise. The need for knowledge synthesis and integration of expertise does not fit well with existing urban governance structures, where there are often entrenched epistemic cultures and 'civic epistemologies' (Jasanoff, 2004).

Third, while co-production raises epistemic and procedural challenges to city-regional intelligence – through drawing attention to the plurality and complexity of knowledge claims and the need for porous, flexible governance arrangements – it also has a distributive dimension. Co-production is often seen in a pragmatist tradition linking knowledge and action (Ferraro et al., 2015), and, in the urban context, as a way of addressing entrenched inequalities and questions of marginalization. Addressing certain issues, such as climate change or urban justice, requires a political stance and challenges dominant trajectories and discourses around economic competitiveness. Rather than consensus, co-production may intentionally unsettle established knowledge claims about the city-region and its future (Karuri-Sebina, 2019). Co-production demands that we question how city-regional intelligence is produced and what impact this has on and for different groups (Dixon et al., 2018).

Responses: designing for co-production

Co-production poses a fundamental challenge to defining, producing and operationalizing city-regional intelligence. It demands that we question not only what knowledge, but whose knowledge, matters, and who benefits in the development of future spatial visions. Responses to these challenges have tended to focus on how to design for co-production (Durose & Richardson, 2015). We have seen the rise in experimental initiatives that seek to produce or integrate different kinds of expertise (Evans, 2016). In contrast to the idea of best practice models which are transplanted around the world without sensitivity to context (Patel et al., 2015), recent decades have seen a rapid increase in both temporary participatory spaces, such as 'urban rooms' (Dixon & Farrelly, 2019) and longer term context-sensitive experimental initiatives and designs, such as living labs, city labs and city observatories (Bulkeley et al., 2019; Cossetta & Palumbo, 2014; Karvonen & van Heur, 2014).

Urban observatories or intelligence hubs, for instance, have become key mechanisms for the production of city-regional intelligence. These hubs typically 'analyse urban data and present the knowledge derived', mostly to 'decision-makers who can then mobilize these insights in practical urban development' (Dickey et al., 2021, p. 5). Although they use a range of methods, most urban observatories or intelligence hubs focus on quantitative methods (Dickey et al., 2021). A typical example is the Dublin Dashboard, which:

provides citizens, public sector workers and companies with real-time information, time-series indicator data, and interactive maps about all aspects of the city. It enables users to gain detailed, up to date intelligence about the city that aids everyday decision making and fosters evidence-informed analysis.

(Dublin Dashboard, 2021)

Many intelligence hubs of necessity focus on the city-region scale, for example, the Gauteng City Region Observatory (GCRO) in South Africa (GCRO, 2021; Washbourne et al., 2019) and the Glasgow City Region Intelligence Hub (GCRIH) (2021). In many cases there are strong links to the data-driven approach to understanding and managing cities and regions that has been embedded in the United Nations SDGs (Perry et al., 2021).

In contrast, a few urban/regional observatories or intelligence hubs focus on more qualitative approaches to understanding city-regions, engaging in knowledge co-production processes that bring together a range of stakeholders with diverse perspectives to generate and operationalize knowledge. Institutions involved in co-production research at the city or city-region scale take a number of forms, for example, 'CityLabs' (also known by terms such as 'urban labs'). CityLabs typically are 'forums for bringing together different knowledge brokers (particularly government and academia) to co-produce policy relevant urban knowledge' (Culwick et al., 2019, p. 9). Urban living labs have also been reframed as potential co-production experiments (Nesti, 2018), a 'term used to refer to a wide variety of local experimental projects of a participatory nature … to test innovative urban solutions in a real-life context' (Steen & van Bueren, 2017, p. 5; see also Moore et al., 2019).

Another concept is that of the 'platform'. Ansell and Miura (2019) offer a review of the emerging terrain of governance platforms, an 'architecture to leverage, catalyze, and harness distributed social action' (p. 264). The Mistra Urban Futures centre, which we define further below, developed *local interaction platforms* (LIPs) as novel cross-institutional and flexible mechanisms based on an integrative epistemology: learning-by-doing from different approaches to transdisciplinary knowledge co-production within multi-stakeholder partnerships to realize just cities.

From design to strategies and tactics

It is also important to examine the strategies and tactics that are deployed by activist-academics working with a mission to support more just futures. The distinction between strategies and tactics was famously elaborated by de Certeau (1984), who differentiated between strategies of the powerful and tactics of resistance deployed by those subjected to such strategies. Despite the enduring appeal of this work, particularly in urban planning, definitions of 'strategies' and 'tactics' are 'tentative and elusive' (Andres et al., 2020, p. 2442). What we can say is that both invoke questions of power and authority (Buchanan,

2000a). This differs from apolitical uses of strategy/tactics where the former is seen as 'a higher order response in which environmental prompts are addressed with foresight, rather than with more immediate instinct' (Mackay & Zundel, 2016, p. 177). In such a conception, strategy is formal and planned, whilst tactics are developed responsively in the field, engaging with concrete realities on the ground.

In this paper we twist de Certeau's original ideas to see strategies and tactics as both part of the toolkit of academics engaged in co-production projects. On the one hand, academics represent the powerful, having convening power to bring together (*intermediate between*) different actors in various configurations, to deliberately work with the grain of existing institutional structures. On the other hand, academics act to resist those same configurations by deploying tactics on the ground to *unsettle existing knowledge claims*. In this sense, strategies focus on the 'who' of co-production, whilst tactics focus on the 'how': together they constitute co-production as a political, epistemic practice.

The specific strategies we are concerned with are strategies of intermediation. Our usage of the term 'intermediaries' draws on literatures which focus on the role of human agents as brokers or boundary agents in knowledge exchange. Unlike a Latourian conceptualization, which focuses on human and non-human interactions, we are focused distinctly on human agency and the role of reflexive academic-activists. Our understanding of 'active intermediaries' draws on that elaborated by May and Perry (2018), who – unlike Latour's intermediaries – do not only passively 'transform, translate, distort or modify the meaning' (Latour, 2005, p. 39) but do so deliberately with the aim of urban justice in mind. Indeed, critics have argued that Latour has overlooked the role of human actors in scientific practices (de Boer et al., 2021). Retaining the prefix 'inter-' is important in drawing attention to the intersubjectivity of co-production, involving referential reflexivity (May & Perry, 2017).

Active intermediation, as a set of interstitial practices between research and practice, is required as the foundation of a reflexive practice for academics and practitioners working in co-production partnerships. We share with Latour a concern to understand 'science-in-the-making' (Latour, 1987, p. 4) and the knowledge construction process. Our interest in tactics of unsettling is important in recognizing that established knowledge claims may be presented as certainties, but are often not. Asking 'intelligence for what and for whose benefit?' means politicizing data, evidence and expertise and exposing the fallacy that facts always speak for themselves. At the same time, existing institutions responsible for responding to urgent urban challenges are often opaque and specialized: the institutional preconditions for co-production do not currently exist (Habermehl & Perry, 2021). Relationships between stakeholders in these structures should not be taken as a given (Vallance et al., 2020). This suggests a need to open the black box of co-production to show not only how different knowledges can be raised to the surface and brought into productive conversation, but also how to start unlocking decision-making processes relating to the present and the future.

Rather than apolitical consensus-building, choices are made about who to bring in and bring together (strategies of intermediation) and what modes of operation to use (tactics of unsettling). These take place not only within projects themselves, but also within a 'buffer zone' (Bennett & Brunner, 2020) involving political work by committed scholar-activists. This work is often overlooked, yet we argue is important for bringing together and questioning whose knowledge matters in defining future imaginaries and visions. We will now draw on the example of the work in Cape Town and Greater Manchester, carried out within the Mistra Urban Futures centre, to further elaborate how these strategies and tactics constitute co-production as a political epistemic practice.

THE CASE OF MISTRA URBAN FUTURES IN CAPE TOWN AND GREATER MANCHESTER

In this paper we use the Mistra Urban Futures' Cape Town and Greater Manchester platforms as examples of city-regional intelligence governance mechanisms focused on co-production as a way of better understanding problems and potential solutions in their respective city-regions.

The Mistra Urban Futures centre was set up in 2010 with the vision of contributing to sustainable urbanization where cities are fair, green and accessible. The core mission of Mistra Urban Futures was to generate and use knowledge to support transitions towards sustainable urban futures through knowledge co-production at local and global levels (e.g., Palmer & Walasek, 2016; Polk, 2015; Simon et al., 2018, 2020). Local interaction platforms (LIPs) were established as organizational mechanisms for delivering the vision and mission to bridge between different stakeholders and recombine forms of expertise to address 'wicked' urban challenges. Platforms were established in Cape Town, Kisumu, Gothenburg and Manchester in a first wave, and then expanded to include partner cities in the UK and Sweden (Sheffield, Stockholm and Malmö/Skåne) and the development of new 'nodes' in Buenos Aires (Argentina) and Shimla (India). The selection of city contexts was stipulated in the original funding bid for the centre, driven by a range of criteria – including their status as secondary, post-industrializing urban sites; their prior experience in and commitment to co-production; credible institutional backing and partnerships; and the provision of match funding.

The governance of the centre as a whole was constituted by a board of directors, which the local platform directors attended in an ex officio capacity; a secretariat and a LIP directors' forum. The strategic and operational plans were signed off by the board, but in practice the centre had a high degree of discretion. After a period of platform consolidation and local project development in Phase 1 (2010–15), comparative or collaborative projects

were developed alongside locally driven work. There was a high degree of autonomy regarding how partnerships would be created locally and a decentralization of decision-making. Long-term flexible funding from the Mistra Foundation and Swedish International Development Co-operation Agency was available to fund core platform staff and local projects, and there was a significant amount of match funding (often in-kind) from local partners and via competitive bids to national research organizations.

The platforms were partnerships between universities, local governments and other stakeholders. In both Cape Town and Greater Manchester, the design of the LIPs was shaped by existing institutional structures, political dynamics, pre-existing histories of collaboration and the relative position of the university as anchor institution for each platform (e.g., Pieterse, 2013). Common factors shaping co-production partnerships included the host role played by a university and the complexity and politics of local governance arrangements (Coleman et al., 2016; Ziervogel et al., 2016). Space prohibits a detailed explanation of these governance differences, which are detailed and documented elsewhere (e.g., Deas et al., 2020; Perry et al., 2018; Smit et al., 2014). Each of the platforms had a wide portfolio of discrete programmes, processes and projects. Within Cape Town two key planks were the CityLab and Knowledge Transfer Programmes. The CityLab Programme brought together different stakeholders to undertake knowledge co-production on key challenges in the Cape Town city-region, including human settlements, climate change, urban flooding, safety and violence, and health, for instance. The Knowledge Transfer Programme was a partnership with the City of Cape Town which consisted of embedding seven researchers within local government to work on policy development whilst undertaking academic research, and the hosting of local government officials within the African Centre for Cities to co-write papers on their practical experience with academic partners.

In Greater Manchester there were three key elements of the platform (Perry et al., 2019a). First, there were a range of discrete co-produced projects with community and policy partners tackling a range of issues, from sustainable food policy, housing, climate change or community-organizing via savings. Some of these projects were led by established researchers, and some undertaken by embedded doctoral students following the Cape Town model noted above. Second the platform included a collaborative governance experiment called the Action Research Collective (ARC) which brought together people from different walks of life to co-initiate and deliver mini action research projects around methods and approaches for participatory urban governance (Perry et al., 2019b). Third, the Greater Manchester programme included a process of policy engagement called 'Developing Co-productive Capacities' to network co-researchers and decision-makers in the Greater Manchester Combined Authority (GMCA).

Methodology

The Mistra Urban Futures LIPs had the explicit intention of challenging epistemic monocultures in the formation of urban intelligence. Analysis to date has focused on the design of such platforms (Perry et al., 2018) and methods and processes deployed (Hemström et al., 2021). This current paper aims to identify the strategies and tactics practiced by academics outside and beyond the formal methods deployed within co-production projects. We use a comparative case study approach between the LIPs in Cape Town and Greater Manchester. As noted above, the choice of platforms was dictated by prior decisions inherited from bidding processes and the institutional set up of the centre. The decision to focus on these two platforms specifically for this paper is the result of a common political ethos connecting work in Cape Town and Manchester, arising from a shared commitment by academics to critical and engaged urban research, and from a shared interpretation of co-production as a political epistemic practice.

The authors were involved in these two platforms from when they were initially set up during the period 2010–12 until they ended in 2020, in roles as senior leaders, administrators and researchers delivering projects. By virtue of the positions we held, we were centrally involved in the constitution, construction and development of the platforms ourselves. This gave us a privileged bird's eye view across a range of activities which, in turn, involved many researchers. This enabled us to map the range of activities that the two platforms undertook and identify different strategies and tactics that applied in both contexts. It is important to note that we are not seeking to claim authorship or ownership over the range of projects and outputs cited, but to provide an overarching analytical framework in which the richness, diversity and messiness of the portfolios can be understood.

The material is drawn together from three different sources. First, each of the platforms has a documented 'design trace' (Garud et al., 2008) of materials and papers, such as minutes, strategies, plans, project reports, as well as blogs, news items, and event promotion materials. Where available we have referenced secondary data sources directly below. This documentation was required for regular quality, management and evaluation (QME) processes and to develop alternative impact indicators for the centre. We were both responsible for analysing the documentation of our respective LIPs to provide data for internal and external reporting. Second, we draw on interviews and evaluation reports carried out as part of formative and summative evaluations. We were interviewed by external assessors, took part in group discussions and interviewed each other about the messy realities of our practice. Finally, there is a reflexive element: our common disposition and interest in the active political work of co-production as an alternative epistemic practice emerged through our shared experience and commensurate positions, driven by the sense that accounts of design and methods were insufficient to capture our practices within our respective contexts. We therefore consolidated

'reflexive snatches' (May & Perry, 2018, p. 161) through structured dialogue in the production and analysis of the data and in the writing of this paper to 'make the world visible … and translating what has been learnt' into our text (Denzin, 2014, p. 569).

Our approach to comparison is informed by a bridge-building approach between a relativist context dependence and generalist context independence through the identification of common categories that could hold difference whilst offering transferable knowledge in the spirit of learning, rather than theory development (May & Perry, 2022). Intra-case comparison between projects in each city's portfolio enabled subsequent inter-site comparative learning to be identified. Our comparative analytical framework was created abductively, through first identifying a set of categories for different intermediary strategies and tactics, and then moving back and forth between the empirical material and our experiences of working in each city-region. The final analytical framework comprises three different strategies of intermediation (strategic, relational and grounded) and four tactics deployed to unsettle existing epistemic conventions (disruption, legitimation, displacement and emplacement). In the next section, we describe the elements of this framework, using selected examples from each context to illustrate, before discussing successes, limitations and dysfunctions.

CO-PRODUCING CITY-REGIONAL INTELLIGENCE

Strategies of intermediation

The construction of the two platforms in Cape Town and Greater Manchester differed along a number of axes. In Cape Town there was a formal partnership between academic and local government organizations, as well as formal and informal bilateral partnerships with a number of other organizations. In Greater Manchester, a flexible approach was developed; first with bilateral partnerships between the university, policy, community and private sectors, then subsequently through a more distributed approach with decision-making devolved to community projects and overlain by light-touch coordination by a core academic team. Despite such differences, researchers in both platforms worked in sometimes parallel processes with civil society on the one hand and policy officials on the other, simultaneously creating spaces for interaction between those that would otherwise inhabit different worlds. We have identified three broad types of intermediation: strategic, relational and grounded (Table 1).

Strategic intermediation

Academics across our platforms planned to bring together officials, city-regional and national organizations to connect with contemporaneous policy processes and extend the reach of the platforms. By 'strategic' here we refer to a process of engaging with and between 'elites': decision-makers with specific roles and remits for the formulation of city-regional visions. The goal was to create opportunities to insert different forms of knowledge into existing

and ongoing policy processes, working with the grain of existing power relations and discourses, in order to shift them from within.

In Cape Town, the Human Settlements CityLab and Climate Change CityLab both explicitly focused on working with government to develop innovative policies and strategies that reflected a diverse range of perspectives. In the former case, an innovative human settlements policy framework, which 'departed from previous policies … narrowly focused on improving housing delivery' (Joubert, 2021, p. 77), was co-produced for the Western Cape government, and in the latter case, there were inputs from a range of stakeholders into the City of Cape Town's research and policy work on climate change (Cartwright et al., 2012). In Greater Manchester, the starting point was to co-produce projects with civil society organizations and citizens groups outside existing circuits of decision-making; however, these sat alongside a process of policy engagement co-developed between researchers and the Greater Manchester Combined Authority (GMCA) called 'Developing Co-productive Capacities' (Perry & Russell, 2020). This involved designated leads operating as conduits to link people and projects from civil society into strategic decision-making processes within the city-region.

Relational intermediation

A second strategy of intermediation involved working relationally through 'horizontal' networks with different groupings and communities of practice in the orbit of, but not formally involved in, decision-making processes. In policy speak, these groups were often attributed formal value by decision-makers as 'stakeholders' – those civil society organizations and intermediary bodies taken to represent wider sections of society through variable levels of formal organization. Our goal was to strengthen existing and create new communities of practice and foster peer learning, with the aim of integrating practice-based, professional and sectoral knowledges, beyond the technical, into city-regional intelligence.

The Cape Town Urban Flooding CityLab, for instance, had an explicit focus on linking together local government officials and civil society practitioners to be able to explore new bilateral collaborations (Anderson et al., 2013; Ziervogel et al., 2016). In Greater Manchester, one specific coalition-building approach involved the creation of the 'Coalitions for Change' initiative involving three co-designed workshops to bring together organizations and individuals from across academia, non-governmental organizations (NGOs), the voluntary, community, faith and social enterprise sector (VCFSE), citizen groups and activist organizations to explore the practices and potential of co-production in the city-region (Toomer McAlpine & Perry, 2021).

Grounded intermediation

This strategy involved working at grassroots level within community settings to value and unearth different forms of expertise usually excluded from city-regional strategy

Table 1. Strategies of intermediation.

	Strategic intermediation	Relational intermediation	Grounded intermediation
Description	Working with officials, city-regional and national organizations	Working 'horizontally' with civil society organizations and intermediary bodies	Working at grassroots level within community and neighbourhood settings, with civic organizations or directly with citizens
Goal	Connecting to and opening contemporaneous policy processes	Creating communities of practice and peer learning	Recognizing citizen/lay expertise and lived experience as city-regional intelligence
Impact on city-regional intelligence	Inserting knowledge into existing processes	Sharing and promoting existing knowledge of practice	Grounding in everyday experiences and redesigning city-regional intelligence to address entrenched inequalities
Dysfunction	Risk of co-optation	Risk of siloing and preferencing some stakeholders over others	Risk of capturing community expertise without any transfer of power

development, planning or spatial visioning exercises. Work was located within different settings in communities and neighbourhoods enrolling smaller community-based organizations (CBOs) and NGOs, citizens and residents as co-researchers in co-production projects. The goal was to value lay and experiential expertise, grounded in everyday life as a means to recognize lived experience of entrenched inequalities as city-regional intelligence.

The Philippi CityLab and the Safety, Violence and Inclusion CityLabs particularly focused on engagement with community organizations. The former engaged with a large number of CBOs and NGOs involved in the Philippi area of Cape Town to explore synergies and collaborations (Brown-Luthango, 2013), whereas the latter engaged with organizations involved in upgrading informal settlements to explore how violence could be addressed as part of upgrading interventions. In Greater Manchester, for instance, researchers worked with community researchers using a photovoice methodology (Silver & Whitehead, 2021) in two disadvantaged areas of Salford and Manchester to counter the myth that areas with low voter turnout were apolitical and apathetic through identifying everyday forms of political action; and worked with women in low-income communities to develop saving groups in Manchester and Salford, drawing on the methodology of Shack/Slum Dwellers International (SDI) and inspired by a series of international exchanges (Greater Manchester Savers, 2020).

Tactics of unsettling

The two platforms used a range of tactics to unsettle the status quo. These tactics can be broadly grouped as: disruption of existing processes, legitimation of expertise and knowledge, displacement of people from their usual spaces, and the emplacement of researchers (Table 2).

Disruption

The first set of tactics involved intervening in existing policy cycles or processes to challenge the status quo in terms of both what constitutes dominant bodies of knowledge and the usual way of doing things. The logic was to unsettle established processes to reveal cracks and opportunities for reshaping city-regional intelligence through articulating different knowledge claims and integrating marginalized forms of expertise. In both Cape Town and Greater Manchester, creative means were deployed as tactics for disruption, to both demystify and de-professionalize processes of knowledge curation and creation, for example, through photography, exhibitions and performance (Silver & Whitehead, 2021; Smit et al., 2014).

Across the platforms there were multiple moments of disrupting usual ways of knowing by exposing people to a range of different perspectives and opening up spaces for reflection, learning and innovation. In Cape Town, the 'sense of exposure and the airing or unpacking of disparate knowledge' resulted in a 'shift in how city officials view climate change, taking it from what was previously perceived as exclusively an environmental issue to one of diverse relevance' (Anderson et al., 2013, p. 6). The knowledge transfer programme (KTP) disrupted existing practices through enabling embedded researchers to navigate local government and make connections and suggestions that would be difficult for employees within the institutional hierarchy (Miszczak & Patel, 2018). Similarly, an intervention into the design process for the Greater Manchester Green Summit Steering Group ensured a 'closing the loop' on processes of community consultation around the Greater Manchester Low Carbon Hub's 5 Year Plan, to increase the chance that feedback and reflection on evidence submitted by different civic groups would be included in forward planning.

Legitimation

Academics involved in the platforms actively sought to legitimize different forms of evidence and expertise through making it visible, creating platforms and performing validatory acts through different forms of representation. The logic here was to unsettle beliefs about what and whose knowledge matters, to challenge prior certainties and unreflexive assumptions. This meant carefully mobilizing the power embodied in the status as an 'academic' through sometimes uncomfortable processes of

Table 2. Tactics of unsettling.

	Disruption	Legitimation	Displacement and emplacement
Description	Intervening in existing policy cycles and processes	Challenging existing notions of evidence and expertise	Taking people out of, or putting them into, less familiar or delimited spaces
Logic	Unsettling established processes	Unsettling beliefs	Unsettling space
Impact on city-regional intelligence	Undoing processes that perpetuate the status quo	Challenging prior certainties and ideas of what is known and what it is to know	Placing people in different contexts with new possibilities and different imaginaries and trajectories
Dysfunction	Paralysis, 'ad hocness'	De-legitimation, uncertainty	Co-option by the host organization, feelings of alienation

vouching and translating from one context to another. Other tactics enabled decision-makers to hear for themselves from those directly affected by urban strategies and decisions.

The conscious curation of seminar series and field trips, and the production of collaborative publications, were able to give legitimacy to types of knowledge that had previously been ignored or undervalued by decision makers. For example, the collaboratively written book *Upgrading Informal Settlements in South Africa* (Cirolia et al., 2016) gave space to civil society practitioners to document their valuable work in upgrading informal settlements in a participatory way. Alongside collaborative writing projects, consideration was accorded to who attends meetings, who is invited to speak and who is positioned as expert. In many cases this meant de-privileging the traditional role of the academic, scientific or technical expert through enabling direct testimony from different perspectives. Both textual and visual methods were important in practices of legitimation, not only telling but showing through walking tours, field trips and site visits. One example is the participatory energy walk organized by a partnership of academics, creatives and environmental activists brought together by Carbon Coop in Manchester. Their carefully curated mobile interventions were intended to legitimate activist demands for a community energy company by opening up retrospectives and horizons of possibility (Knox, 2019). More widely, activities were curated not only by academics but also independently by practitioner peer researchers, as forms of collective legitimation and validation of experiential expertise through, for instance, action learning sets in Greater Manchester for co-production practitioners.

Displacement and emplacement

Across the platforms researchers sought to take people out of their usual places and spaces of work or activity into less familiar or previously delimited spaces, and to embed researchers within organizations, settings and processes. Here, the logic was that by unsettling space – placing people in different contexts – alternative imaginaries and trajectories might emerge. The emphasis was not only on creating 'third' spaces but on enabling exchange, mutual understanding and comparative insights.

In the Cape Town Knowledge Transfer Programme, a writers' exchange programme enabled officials from the City of Cape Town to get special leave of up to two months to work with an academic writing partner on campus to document and reflect on their practice. This would not have been able to happen in officials' normal jobs, as most city officials were constantly caught up in addressing crises. Researchers in Greater Manchester used similar tactics to take officials out of their usual places of work within and outside the city-region, and invite citizens and practitioners into university and policy spaces. An explicit focus was also on fostering inter-community exchanges across neighbourhoods and internationally. For instance, the Developing Co-productive Capacities programme involved taking four delegations comprising officials, activists and community organizers on international exchanges to Cape Town, Kisumu, Barcelona and Gothenburg (Joubert, 2021); and international exchanges with SDI supported the development of women-led savings (Greater Manchester Savers, 2020).

In both Cape Town and Greater Manchester doctoral students were placed within local governmental departments as 'embedded researchers'. In Cape Town, these embedded researchers gained unique access, for example, they 'got to see, experience and be part of things that … are almost impossible to access otherwise … [to] witness first-hand how the City conducts business, what conversations people were having, and what language they use to frame issues' (Taylor, quoted in Joubert, 2021, p. 82). In Greater Manchester, a doctoral researcher joined the Greater Manchester Low Carbon Hub in 2016 to both track and support more co-productive climate change and environment policy pathways. Emplacement also occurred within community settings with researchers spending considerable time working in neighbourhood organizations to put their energies and efforts at the service of the community.

DISCUSSION

Successes

The data from Cape Town and Greater Manchester evidence how strategies and tactics challenged the concepts

of city-regional intelligence, through exposing policymaking and implementation to more and different voices and forms of expertise. Processes allowed space for a greater range of inputs to influence policies and strategic visions, thus enabling innovation and the collaborative development of more appropriate policies and strategies that better address local needs. Strategies and tactics resulted in the development of inter-sectoral 'coalitions of the willing' working towards and demanding greater spatial, economic, environmental, cultural and social justice, as well as new communities of practice cutting across traditional divides between government and public, and between research and practice. Importantly, our evidence shows that how strategies and tactics are deployed simultaneously matters most: by individual researchers, project teams and coordinators, sometimes explicitly and deliberately, and sometimes organically and chaotically.

The processes led to greater porosity between critical researchers working on urban justice issues and policy positions. Several post-doctoral researchers involved in co-production processes ultimately took jobs with local governments and conversely, activists or officials moved into academia. The vast number of co-authored reports, special issues, articles, videos, exhibitions and presentations served to expand and diversify the evidence base for future decision-making. Co-production helped challenge, and in some cases alter, dominant discourses – for example in relation to the co-production of the Living Cape Framework, the introduction of ideas around co-production into strategic White Papers on public sector reform into Greater Manchester, or the agenda and programme of the Greater Manchester Inequalities Commission. Yet beyond this, markers of change were subtle, engendering a 'sense that radical changes are needed' (Marcuse et al., 2011), the introduction of new ideas 'on the table', new and strengthened alliances and coalitions, increasing transparency of how decisions get made and experimental alternative policy processes (Perry & Atherton, 2017). This suggests that the role of co-production in opening up city-regional intelligence is in the spirit of *moving towards*, if not realizing, more just cities through addressing epistemic, procedural and distributive challenges.

Limitations

At the same time, researchers across each of the platforms encountered practical limitations in the effectiveness of strategies and tactics. First, co-production works against the grain of existing governance and institutional cultures, which have path-dependent informational and intelligence systems based on established ways of working and hierarchies of expertise. The success in challenging such epistemic norms depended on the porosity of institutions, leadership and cultural attitudes and the roles of gatekeepers, as well as the relative legitimacy and authority held by academics themselves. In Cape Town, the prior experience of many academics mattered in constituting their legitimacy and ability to move between different spaces; the majority of platform staff had worked outside academia, within the NGO sector or as government officials or consultants. This practical experience was valued and led to greater openness on the part of decision-makers to new knowledge inputs. In Greater Manchester, more senior academics generally had easier passage into the corridors of decision-making than early career researchers or practitioners, valued by virtue of their attributed independence and neutrality.

Second, co-production processes landed in existing political contexts and terrains. In Cape Town at the time, the City and Provincial governments were controlled by centre-right parties focused on economic growth and privatization, whereas civil society was overwhelmingly to the left, with most forms of interaction largely hostile, for example, through protest action or forced evictions (Smit et al., 2015). An explicit decision was therefore made by the platform hosts to sometimes work in parallel and independent processes with local/provincial government officials, on the one hand, and civil society on the other. In Greater Manchester, the landscape in which strategies and tactics were deployed was equally shaped by existing political dynamics, related, for instance, to devolution processes and the politics of 'City Deals' between central and local government (Waite et al., 2013). Although local governments in Greater Manchester were predominately dominated by the Labour Party, a hegemonic growth coalition had nonetheless been the predominant driving force behind city-regional strategies and developments up to the late 2010s (Haughton et al., 2016). A key element of strategic intermediation therefore involved finding the cracks in existing policy processes and identifying officials willing and able to work from within their institutions to challenge existing norms. In both contexts, we encountered issues where strategies and tactics for co-production were neither possible nor desirable. For instance, where actors held fundamentally incompatible or dissensual views – such as on contesting neoliberal growth agendas, the financialization of housing or urban food security, efforts to open up epistemic horizons were met with active attempts to force closure in the preservation of the status quo.

Third, a limitation we encountered in our platforms was paradoxically a prioritization of process over method, of the qualitative over the quantitative. The need to correct dominant approaches and find methodologies with wide acceptance generally led to an exclusion of certain forms of evidence and a focus on qualitative and creative methods. In the Cape Town example, there were some specific exceptions, for example, one of the embedded researchers contributed to an innovative GIS model of the spatial economy of Cape Town for the urban planning department, and the Urban Flooding CityLab experimented with the grassroots collection of geospatial data on the impact of flooding on informal settlements. In Greater Manchester, several co-production projects experimented with digital platforms as architectures for profiling social, economic and environmental alternatives (for instance, around food systems, sustainability and transformational economic actors). However, efforts to correct existing

imbalances generally led to a focus on qualitative processes, and on the social sciences and humanities, rather than the interface between more divergent forms of data and expertise.

Dysfunctions

At the same time, we recognize that each of the strategies carries risks or dysfunctions (Table 1), which need to be carefully navigated to avoid new or exacerbate epistemic exclusions. Working strategically with policymakers risks that academics are co-opted into existing policy agendas. Strengthening certain networks and communities of practice over others risks creating new silos or preferred stakeholders, relieving decision-makers of the necessity of recognizing wider differences and expertise. Co-production can be criticized for the assumption that connection is always positive; there are times where being off the radar, and enabling community development untied to formal political processes, is a better strategy – although in contexts like South Africa, informality and lack of adherence to formal regulations can carry high risks. Here the politics of invisibility as well as visibility comes into play, so that surfacing expertise does not result in capture without attribution or any transfer of power.

Tactics also have their dysfunctions (Table 2). Disruption can result in decision-making paralysis, and can also lead to 'ad hocness' whilst established planning and policy-making processes are being rethought, which can diminish transparency. If certain forms of expertise are legitimized through co-production partnerships, what and who becomes de-legitimized in the process? Simultaneously, time and funding often limit who has access to conference attendance or site visits, and transport links around the city can raise participation barriers to tactics of displacement. For example, in the case of the Philippi CityLab, most meetings were held in the local area to allow unfunded CBOs to attend. However, this sometimes excluded others from participating due to their distance from such peripheral areas. The tactics of emplacement could also result in the (willing or unwilling) 'co-option' of the emplaced researcher. In both Cape Town and Greater Manchester, agreements with city partners sought to limit time commitments from doctoral and post-doctoral researchers to work on policy issues to guard against this.

CONCLUSIONS: CO-PRODUCTION AS POLITICAL EPISTEMIC PRACTICE

The question of whose knowledge matters in determining city futures needs to be taken more seriously than it has been to date. How city-regional intelligence is conceptualized, identified, produced and acted on is a political choice with distributive effects. Drawing on our work we have demonstrated the value and limits of intermediation in moving between different spheres of action, with researchers working in parallel processes with civil society, on the one hand, and policy officials on the other, and simultaneously creating spaces for interaction between those that would usually inhabit different worlds. In these

boundary crossings, researchers deployed tactics of disruption, legitimation, displacement and emplacement to overcome structural barriers and open up epistemic horizons. This enabled the formation of inter-sectoral coalitions of the willing who, through direct experience, were able to appreciate the value of different ways of knowing and seeing.

Strategies of intermediation sought simultaneously to connect with decision-makers to open up policy processes, create communities of practice and legitimate lay knowledge and expertise in order to unbound dominant concepts of whose knowledge matters for city-regional intelligence. A remaking of city-regional intelligence was then enabled through tactics which unsettled time (disruption), beliefs (legitimation), and space (displacement and emplacement). These tactics are 'subtle movements of escape and evasion' (Buchanan, 2000b, p. 94). The temporal dimension was particularly important in both slowing down and speeding up processes. On the one hand, tactics aimed to create spaces for reflection and learning – a time-out for those usually pressured by short-term or political deadlines. On the other hand, both platforms sought to inject an urgency in acting on chronic injustices.

Whilst this paper draws empirically on practices in Cape Town and Greater Manchester, our framework is of wider utility for applied and activist regional and urban researchers in different contexts. Through our use of strategies and tactics we position academics as powerful actors in the making of city-regional intelligence, working with and resisting dominant epistemic cultures. Our findings can be read through de Certeau's assertion that 'strategy is a technique of place and tactics is a technique of space' (de Certeau cited in Buchanan, 2000b, p. 89), where the latter are 'dependent on time, watching for opportunities and manipulating events' (de Certeau, cited in Dant, 2003, p. 79). Our analytical framework can make sense of and make visible the often-hidden work of co-producing city-regional intelligence. This is critical if co-production is not to be seen as a simple quick fix or add-on to existing participatory practice.

The focus on *practices* is particularly important. Regional studies have tended to correlate excellent research with the application of robust methodologies and methods in the search to avoid 'fuzziness' (Markusen, 2003) and produce certainty about strategic options and likely outcomes. Consideration of practices draws attention to the hidden academic work that surrounds research designs, methods and techniques. In the context of academic engagement beyond the university, which positions researchers deeply within the scalar politics of knowledge production, we need to pay more attention to this often unacknowledged or recognized labour. This has further implications for how we educate and support the next generation of critical and applied regional researchers. Beyond specific training in methods, skills are required that can only be learnt on the job or in the field. As expertise involved in strategies of intermediation and tactics of unsettling is often tacit and embodied, peer learning and

mentoring are essential between experienced engaged researchers and early career researchers.

Furthermore, whilst co-production has a long lineage in other disciplines, critical regional studies of co-production are still in their infancy. As interest in co-production is on the rise, regional and urban studies need to think carefully about how to position and understand the relevance of co-production in relation to disciplinary foundations. Just as we have become more critical of the 'smart cities' discourse, so too must researchers be cautious in the theorization and application of co-production. There is a danger that regional and urban studies reinforce a depoliticized understanding of co-production – in the name of an integrative or consensus-oriented logic. Despite dominant tropes around consensus-building or 'neutral spaces', knowledge co-production is messy, chaotic and value-laden, not value-free.

We have sought to illuminate some of the politics of knowledge production in this paper and show how epistemic openings and closures are performed both by academics, officials and civil society. By opening up the black box of co-production and raising questions around epistemic authority, justice and governance, we show that city-regional intelligence is already, and always, political.

We can be critical of those who believe that hard data and computer-generated models of how city-regions work constitute the best intelligence about the city-region without giving due consideration to on-the-ground knowledge and lived experience. Yet we must also recognize the limitations of co-production – particularly given the power to determine what and whose knowledge matters. Knowledge co-production is not a panacea, nor is it a substitute for public participation. It is, however, a valuable way to bring together different perspectives and positionalities to expand the knowledge base of city-regions and contribute evidence that matters for sustainable, inclusive urban futures.

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REFERENCES

Anderson, P. M. L., Brown-Luthango, M., Cartwright, A., Farouk, I., & Smit, W. (2013). Brokering communities of knowledge and practice: Reflections on the African Centre for Cities' CityLab programme. *Cities*, 32, 1–10. https://doi.org/10.1016/j.cities.2013.02.002

Andres, L., Jones, P., Denoon-Stevens, S. P., & Lorena, M. (2020). Negotiating polyvocal strategies: Re-reading de Certeau through the lens of urban planning in South Africa. *Urban Studies*, 57 (12), 2440–2455. https://doi.org/10.1177/0042098019875423

Ansell, C., & Miura, S. (2019). Can the power of platforms be harnessed for governance? *Public Administration*, 98(1), 261–276. https://doi.org/10.1111/padm.12636

Bennett, H., & Brunner, R. (2020). Nurturing the buffer zone: Conducting collaborative action research in contemporary contexts. *Qualitative Research*, 22(1), 74–92. https://doi.org/10.1177/1468794120965373

Brown-Luthango, M. (2013). Community–university engagement: The Philippi CityLab in Cape Town and the challenge of collaboration across boundaries. *Higher Education*, 65(3), 309–324. https://doi.org/10.1007/s10734-012-9546-z

Buchanan, I. (2000a). *Michel de Certeau: Cultural theorist*. Sage.

Buchanan, I. (2000b). Tactics and strategies. In I. Buchanan (Ed.), *Michel de Certeau: Cultural theorist* (pp. 86–108). Sage.

Bulkeley, H., Marvin, S., Voytenko Palgan, Y., McCormick, K., Breitfuss-Loidl, M., Mai, L., Von Wirth, T., & Frantzeskaki, N. (2019). Urban living laboratories: Conducting the experimental city. *European Urban and Regional Studies*, 26(4), 317–335. https://doi.org/10.1177/0969776418787222

Cartwright, A., Parnell, S., Oelofse, G., & Ward, S. (Eds.). (2012). *Climate change at the city scale: Impacts, mitigation and adaptation in Cape Town*. Earthscan.

Cirolia, L. R., Görgens, T., Van Donk, M., Smit, W., & Drimie, S. (Eds.). (2016). *Upgrading informal settlements in South Africa: A partnership-based approach*. University of Cape Town Press.

Coleman, A., Segar, J., & Checkland, K. (2016). The devolution project in Greater Manchester: Introduction to the special issue. *Representation*, 51(4), 377–384. https://doi.org/10.1080/00344893.2016.1165496

Cossetta, A., & Palumbo, M. (2014). The co-production of social innovation: The case of Living Lab. In R. Dameri & C. Rosenthal-Sabroux (Eds.), *Smart city* (pp. 221–235). Springer.

Culwick, C., Washbourne, C.-L., Anderson, P. M. L., Cartwright, A., Patel, Z., & Smit, W. (2019). CityLab reflections and evolutions: Nurturing knowledge and learning for urban sustainability through co-production experimentation. *Current Opinion in Environmental Sustainability*, 39, 9–16. https://doi.org/10.1016/j.cosust.2019.05.008

Dant, T. (2003). *Critical social theory: Culture, society and critique*. Sage.

Davoudi, S., & Brooks, E. (2020). City-regional imaginaries and politics of rescaling. *Regional Studies*, *55*(1), 52–62. https://doi.org/10.1080/00343404.2020.1762856

de Boer, B., Te Molder, H., & Verbeek, P.-P. (2021). Understanding science-in-the-making by letting scientific instruments speak: From semiotics to post-phenomenology. *Social Studies of Science*, *51*(3), 392–413. https://doi.org/10.1177/0306312720981600

de Certeau, M. (1984). *The practice of everyday life*. Translated by S. F. Rendell [1980]. University of California Press.

Deas, I., Haughton, G., & Ward, K. (2020). Scalar post politics, inclusive growth and inclusive economies: Challenging the Greater Manchester agglomeration model. *Cambridge Journal of Regions, Economy and Society*, *14*(1), 179–195. https://doi.org/10.1093/cjres/rsaa022

Denzin, N. K. (2014). Writing and/as analysis or performing the world. In U. Flick (Ed.), *The Sage handbook of qualitative data analysis* (pp. 569–584). Sage.

Derudder, B., & van Meeteren, M. (2019). Engaging with 'urban science'. *Urban Geography*, *40*(4), 555–564. https://doi.org/10.1080/02723638.2019.1585138

Dickey, A., Acuto, A., & Washbourne, C. (2021). *Urban observatories: A comparative review. Connected cities Lab*. University of Melbourne.

Dixon, T., & Farrelly, L. (2019). Urban rooms: Where people get to design their city's future. *The Conversation*, January 18. theconversation.com

Dixon, T., Montgomery, J., Horton-Baker, N., & Farrelly, L. (2018). Using urban foresight techniques in city visioning: Lessons from the Reading 2050 vision. *Local Economy*, *33*(8), 777–799. https://doi.org/10.1177/0269094218800677

Dublin Dashboard. (2021). *About the dashboard*. https://www.dublindashboard.ie

Duminy, J., & Parnell, S. (2020). City science: A chaotic concept–and an enduring imperative. *Planning Theory and Practice*, *21*(4), 648–655. https://doi.org/10.1080/14649357.2020.1802155

Durose, C., Perry, B., & Richardson, L. (2020). Co-producing research with users and communities. In E. Loeffler, & T. Bovaird (Eds.) (pp. 669–692). Palgrave Macmillan.

Durose, C., & Richardson, L. (Eds.). (2015). *Designing public policy for co-production: Theory, practice and change*. Policy Press.

Evans, J. (2016). Trials and tribulations: Problematizing the city through/as urban experimentation. *Geography Compass*, *10*(10), 429–443. https://doi.org/10.1111/gec3.12280

Ferraro, F., Etzion, D., & Gehman, J. (2015). Tackling grand challenges pragmatically: Robust action revisited. *Organization Studies*, *36*(3), 363–390. https://doi.org/10.1177/0170840614563742

Flinders, M., Wood, M., & Cunningham, M. (2016). The politics of co-production. *Evidence & 18 Policy*, *12*(2), 261–279. https://doi.org/10.1332/174426415X14412037949967

Funtowicz, S. O., & Ravetz, J. R. (1993). Science for the post-normal age. *Futures*, *25*(7), 739–755. https://doi.org/10.1016/0016-3287(93)90022-L

Garud, R., Jain, S., & Tuertscher, P. (2008). Incomplete by design and designing for incompleteness. *Organization Studies*, *29*(3), 351–371. https://doi.org/10.1177/0170840607088018

Gauteng City Region Observatory (GCRO). (2021). https://www.gcro.ac.za/

Glasgow City Region Intelligence Hub (GCRIH). (2021). http://www.glasgowcityregion.co.uk/IntelligenceHub

Greater Manchester Savers. (2020). *Our story so far*. Report. https://communitysavers.net/wp-content/uploads/2020/05/GMS-STORYSOFAR-LOW-RES.pdf

Habermehl, V., & Perry, B. (2021). The risk of austerity co-production in city-regional governance in England. *International Journal of Urban and Regional Research*, *45*(3), 555–571. https://doi.org/10.1111/1468-2427.13010

Haughton, G., Deas, I., Hincks, S., & Ward, K. (2016). Mythic Manchester: Devo Manc, the Northern Powerhouse and rebalancing the English economy. *Cambridge Journal of Regions, Economy and Society*, *9*(2), 355–370. https://doi.org/10.1093/cjres/rsw004

Hemström, K., Simon, D., Palmer, H., Perry, B., & Polk, M. (2021). *Transdisciplinary knowledge co-production: A practical guide*. Practical Action.

Huggins, R. (2010). Regional competitive intelligence: Benchmarking and policy-making. *Regional Studies*, *44*(5), 639–658. https://doi.org/10.1080/00343400802331312

Jasanoff, S. (2004). *States of knowledge. The co-production of science and social order*. Routledge.

Joubert, L., & Mistra Urban Futures Realising Just Cities Team (2021). *Realising just cities*. Mistra Urban Futures and African Centre for Cities.

Karuri-Sebina, G. (2019). Urban Africa's futures: Perspectives and implications for agenda 2063. *Foresight*, *22*(1), 95–108. https://doi.org/10.1108/FS-07-2019-0056

Karuri-Sebina, G., Haegeman, K.-H., & Ratanawaraha, A. (2016). Urban futures: Anticipating a world of cities. *Foresight*, *18*(5), 449–453. https://doi.org/10.1108/FS-07-2016-0037

Karvonen, A., & van Heur, B. (2014). Urban laboratories: Experiments in reworking cities. *International Journal of Urban and Regional Research*, *38*(2), 379–392. https://doi.org/10.1111/1468-2427.12075

Knox, H. (2019). *Power in the city: A walk through Manchester's electric past*. Carbon Coop blog.

Latour, B. (1987). *Science in action: How to follow scientists and engineers through society*. Harvard University Press.

Latour, B. (2005). *Reassembling the social: An introduction into actor–network theory*. Oxford University Press.

Mackay, D., & Zundel, M. (2016). Recovering the divide: A review of strategy and tactics in business and management. *International Journal of Management Reviewers*, *19*(2), 175–194. https://doi.org/10.1111/ijmr.12091

Mair, S., Jones, A., Ward, J., Christie, I., Druckman, A., & Lyon, F. (2017). A critical review of the role of indicators in implementing the sustainable development goals. In L. F. W (Ed.), *Handbook of sustainability science* (pp. 41–56). Springer.

Marcuse, P., Connolly, J., Novy, J., Olivo, I., Potter, C., & Steil, C. (2011). *Searching for the just city. Debates in urban theory and practice*. Routledge.

Markusen, A. (2003). Fuzzy concepts, scanty evidence, policy distance: The case for rigour and policy relevance in critical regional studies. *Regional Studies*, *37*(6–7), 701–717. https://doi.org/10.1080/0034340032000108796

May, T., & Perry, B. (2017). *Cities and the knowledge economy: Promise, politics and possibilities*. Routledge.

May, T., & Perry, B. (2018). *Reflexivity: The essential guide*. Sage.

May, T., & Perry, B. (2022). *Social research: issues, methods and process* (5th Edn). Open University Press/McGraw-Hill.

Miszczak, S. M., & Patel, Z. (2018). The role of engaged scholarship and co-production to address urban challenges: A case study of the Cape Town knowledge transfer programme. *South African Geographical Journal*, *100*(2), 233–248. https://doi.org/10.1080/03736245.2017.1409649

Mitlin, D. (2008). With and beyond the state – Co-production as a route to political influence, power and transformation for grassroots organizations. *Environment and Urbanization*, *20*(2), 339–360. https://doi.org/10.1177/0956247808096117

Moore, T., Horne, R., & Doyon, A. (2019). Housing industry transitions: An urban living Lab in Melbourne, Australia. *Urban Policy and Research*, *38*(2), 118–131. https://doi.org/10.1080/08111146.2020.1730786

Nesti, G. (2018). Co-production for innovation: The urban living lab experience. *Policy and Society*, *37*(3), 310–325. https://doi.org/10.1080/14494035.2017.1374692

Nijman, J., & Wei, Y. D. (2020). Urban inequalities in the 21st century economy. *Applied Geography*, *117*, 102188. https://doi.org/10.1016/j.apgeog.2020.102188

Nowotny, H., Scott, P., & Gibbons, M. (2001). *Re-thinking science: Knowledge and the public in an Age of uncertainty*. Policy Press.

Palmer, H., & Walasek, H. (Eds.). (2016). *Co-production in action: Towards realising just cities*. Mistra Urban Futures.

Pan, Y., Tian, Y., Liu, X., Gu, D., & Hua, G. (2016). Urban big data and the development of city intelligence. *Engineering*, *2*(2), 171–178. https://doi.org/10.1016/J.ENG.2016.02.003

Patel, Z., Greyling, S., Parnell, S., & Pirie, G. (2015). Co-producing urban knowledge: Experimenting with alternatives to 'best practice' for Cape Town, South Africa. *International Development Planning Review*, *37*(2), 187–202. https://doi.org/10.3828/idpr.2015.15

Perry, B., & Atherton, M. (2017). Beyond critique: The value of co-production in realising just cities? *Local Environment*, *22*(1), 36–51. https://doi.org/10.1080/13549839.2017.1297389

Perry, B., Diprose, K., King, S., Habermehl, V., Hine, I., May, T., Russell, B., Simpson, V., Spring, C., Taylor Buck, N., Bellinson, R., McVicar-Payling, A., & Patient, J. (2019a). *Realising just cities: An overview of activity 2016–2019*. Seventy-Seven Creations.

Perry, B., Diprose, K., Taylor Buck, N., & Simon, D. (2021). Localizing the SDGs in England: Challenges and value propositions for local government. *Front. Sustain. Cities*, *3*, 746337. https://doi.org/10.3389/frsc.2021.746337

Perry, B., Durose, C., & Richardson, L. & Action Research Collective (2019b). *How can we govern differently? The promise and practice of co-production*. Creative Concern.

Perry, B., Patel, Z., Noren Bretzer, Y., & Polk, M. (2018). Organising for co-production: Local interaction platforms for urban sustainability. *Politics and Governance*, *6*(1), 189–198. https://doi.org/10.17645/pag.v6i1.1228

Perry, B., & Russell, R. (2020). Participatory cities from the 'outside in': The value of comparative learning. In D. Simon, H. Palmer, & J. Riise (Eds.), *Comparative co-production* (pp. 133–155). Policy Press.

Pieterse, E. (2013). City/university interplays amidst complexity. *Territorio*, *66*(66), 26–32. https://doi.org/10.3280/TR2013-066005

Pillay, U. (2004). Are globally competitive 'city regions' developing in South Africa? Formulaic aspirations or new imaginations? *Urban Forum*, *15*(4), 340–364. https://doi.org/10.1007/s12132-004-0013-5

Polk, M. (2015). *Co-producing knowledge for sustainable cities: Joining forces for change*. Routledge.

Ravetz, J. (2020). *Deeper city: Collective intelligence and the pathways from smart to wise*. Routledge.

Rittel, H. W. J., & Webber, M. M. (1973). Dilemmas in a general theory of planning. *Policy Sciences*, *4*(2), 155–169. https://doi.org/10.1007/BF01405730

Silver, D., & Whitehead, S. (2021). A method for making the everyday visible: Photovoice and everyday politics. In K. Hemström, D. Simon, H. Palmer, B. Perry, & M. Polk (Eds.), *Transdisciplinary knowledge co-production: A practical guide* (pp. 141–146). Practical Action.

Simon, D., Palmer, H., & Riise, J. (2020). *Comparative urban research from theory to practice: Co-production for sustainability*. Policy Press.

Simon, D., Palmer, H., Riise, J., Smit, W., & Valencia, S. (2018). The challenges of transdisciplinary knowledge production: From unilocal to comparative research. *Environment and Urbanization*, *30*(2), 481–500. https://doi.org/10.1177/0956247818787177

Smit, W., de Lannoy, A., Dover, R. V. H., Lambert, E. V., Levitt, N., & Watson, V. (2014). 'Good houses make good people': Making knowledge about health & environment in Cape Town. In B. Cooper, & R. Morrell (Eds.), *Africa-centred knowledges: Crossing fields and worlds* (pp. 142–162). James Currey.

Smit, W., Lawhon, M., & Patel, Z. (2015). Co-producing knowledge for whom, and to what end? Reflections from the African centre for cities in Cape Town. In M. Polk (Ed.), *Co-producing knowledge for sustainable cities: Joining forces for change* (pp. 47–69). Routledge.

Steen, K., & van Bueren, E. (2017). *Urban living labs: A living lab way of working*. Amsterdam.

Tacoli, C. (ed.). (2006). *The Earthscan reader in rural–urban linkages*. Earthscan.

Toomer McAlpine, A., & Perry, B. (2021). Closing the co-productive cycle: Creative documentation for multi-vocal representation. In K. Hemström, D. Simon, H. Palmer, B. Perry, & M. Polk (Eds.), *Transdisciplinary knowledge co-production: A practical guide* (pp. 159–163). Practical Action.

Vallance, P., Tewdwr-Jones, M., & Kempton, L. (2020). Building collaborative platforms for urban innovations: Newcastle City futures as a quadruple helix intermediary. *European Urban and Regional Studies*, *27*(4), 325–341. https://doi.org/10.1177/0969776420905630

Waite, D., Maclennan, D., & O'Sullivan, T. (2013). Emerging city policies: Devolution, deals and disorder. *Local Economy*, *28*(7–8), 770–785. https://doi.org/10.1177/0269094213500122

Washbourne, C.-L., Culwick, C., Acuto, M., Blackstock, J., & Moore, R. (2019). Mobilising knowledge for urban governance: The case of the Gauteng city-region observatory. *Urban Research and Practice*, *14*(1), 27–49. https://doi.org/10.1080/17535069.2019.1651899

Ziervogel, G., Waddell, J., Smit, W., & Taylor, A. (2016). Flooding in Cape Town's informal settlements: Barriers to collaborative urban risk governance. *South African Geographical Journal*, *98*(1), 1–20. https://doi.org/10.1080/03736245.2014.924867