Beyond Partnerships: Embracing Complexity to Understand and Improve Research Collaboration for Global Development

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ABSTRACT

While there is a burgeoning literature on the benefits of research collaboration for development, it tends to promote the idea of the 'partnership' as a bounded site in which interventions to improve collaborative practice can be made. This article draws on complexity theory and systems thinking to argue that such an assumption is problematic, divorcing collaboration from wider systems of research and practice. Instead, a systemic framework for understanding and evaluating collaboration is proposed. This framework is used to reflect on a set of principles for fair and equitable research collaboration that emerged from a programme of strategic research and capacity strengthening conducted by the Rethinking Research Collaborative (RRC) for the United Kingdom (UK)'s primary research funder: UK Research and Innovation (UKRI). The article concludes that a systemic conceptualisation of collaboration is more responsive than a 'partnership' approach, both to the principles of fairness and equity and also to uncertain futures.

Keywords: Research partnerships, research collaboration, higher education policy, research funding, systems thinking, complexity theory,

1. Introduction

In a world increasingly recognized as complex, uncertain, interconnected and facing pressing environmental and social challenges, there is an urgent need for "new thinking about the multiple causes… new insights into the multiple pathways and levels required for better solutions and… stakeholder acceptance of shared strategies and processes" (Head 2008: 115). Academic research offers some expertise to support

this 'new thinking' (Conway and Waage 2010; Bardsley 2017). However, responding to complex global challenges means bringing together those most implicated with those best placed to address them as well as with more remote centres of 'expertise'. Such a coordinated approach implies collaboration across academic disciplines, professional sectors and different countries. It means responding to local needs and priorities framed by long-term, sustainable agendas, while adapting to changing issues and contexts and responding to new learning (Cundill et al 2017). This rationale for research collaboration is often grounded in a rhetoric of effectiveness and efficiency. However, there has also been an emerging focus on equity (see Carbonnier and Kontinen 2014; Winterford 2017; UKCDS 2017; RRC 2018). The rationale for equitable collaboration responds to arguments that are *normative* (e.g. that research should actively redress inequitable global distributions of knowledge in pursuit of 'cognitive justice'- Shiva 1997; Visvanathan 2005); *instrumental* (e.g. that ownership and mutual accountability can enhance partnership outcomes, but also expand disciplinary knowledge by exposing alternative epistemologies, ontologies and ethics- see Connell, 2007; de Sousa Santos, 2014; Hall and Tandon 2017); and *statutory* (e.g. that conditions of Official Development Assistance (ODA) demand that research funded through ODA is grounded in practice and of direct benefit to countries on the OECD's Development Assistance Committee (DAC)'s list, RRC 2018). However, while the impetus is clear, significant challenges have emerged that obstruct both effective and equitable collaboration. These include: incompatible agendas, cultures, ways of working, and timescales between partners (see Aniekwe et al 2012, Stevens et al 2013, Chernikova 2016; Shucksmith 2016, CCIC/CASID 2017, Georgalakis 2017); the effects of national policy contexts on a range of factors from the framing and administration of funds to availability of visas (Carbonnier and Kontinen 2014, Leege and McMillan 2016, Mougeot 2017); and unequal participation in different aspects of research-into-practice, fuelled by different ideas of what counts as legitimate research and expertise (Fransman and Newman 2019).

In response to these challenges, a burgeoning set of resources on *doing* 'research partnerships' has emerged, primarily from the global North (e.g. Aniekwe et al, 2012; ELRHA 2012; Stevens et al 2013; KFPE 2014; Brouwer et al 2016; CCIC and CASID 2017; Cornish et al 2017; Winterford 2017). This literature tends to analyse discrete

partnerships; usually bilateral relationships involving an academic institution based in the Global North and a 'practitioner' or policy-making institution working either internationally or located in the Global South. It also tends to focus on the processes of establishing partnerships and designing, implementing, producing and communicating research, often within the confines of a time-bound funded project. And it tends to describe the benefits of partnerships, highlight the challenges to partnerships and provide some "how to" guidance on improving partnerships.

This literature has undoubtedly helped to expose some of the power relations that affect partnerships, to support those at the frontline of research collaboration, and to nurture a culture of responsibility and critical reflection, particularly amongst academics. However, in rendering partnerships as a 'technical fix' to the challenges of global challenge research (Murray Li 2007), this literature tends to *depoliticize* questions around the nature of research. It focuses on technical inputs to improve partnerships (and thereby research) with less attention to challenging inequity in research roles, processes, practices and outputs. It tends to advance an *essentialist*, *simplified* and *reductive* understanding of partnerships as bounded entities, comprised of two or more 'partners'. These tend to be framed as either institutions or archetypes of individuals (such as 'academic' or 'researcher' and 'practitioner' or 'research user') that perform set functions and retain their original form regardless of the change that unfolds through the partnership process. The literature also tends to *decontextualize* partnerships, divorcing them from the historical and evolving geo-political landscapes in which they are situated and failing to consider the potential impact of future scenarios on both collaboration and research practice. It tends to position partnerships as relatively *static* entities within a *linear* understanding of research-into-practice. And it tends to assume that the primary responsibility for improvements to collaborative practice rests with the 'partners' themselves (and that they have the agency to affect change) – see Cairney and Oliver 2018.

In this article, we argue that these tendencies both limit our understanding of partnerships as well as our efforts to improve collaboration. Drawing on systems thinking and complexity theory, we develop a conceptual framework which we use to reflect on 'Eight Principles for Fair and Equitable Research Partnerships' that emerged

from a recent programme of strategic research and capacity building conducted by the Rethinking Research Collaborative (RRC) for the United Kingdom's (UK) main public research funder: UK Research and Innovation (UKRI). We conclude by calling for an end to the rhetoric of *partnership* and instead propose a systemic understanding of *collaboration* that is better placed to respond to the values of fairness and equity and our complex and uncertain times.

2. The Rethinking Research Collaborative (RRC)'s initiative and its eight principles for fair and equitable research partnerships

The RRC[1] is an international network of networks including academics, civil society organisations and trans-national social movements, international NGOs, and research support providers who are committed to working together to explore the politics of evidence and participation in the mobilization of knowledge for global development. The collaborative emerged over the course of a two-year seminar series on 'evidence and the politics of participation in research partnerships' (see Fransman and Newman 2019) and was formally established in 2017. The RRC aims to encourage more inclusive, responsive and transformative collaboration to improve the production of useful research for social justice and global development. It has four key objectives: i) to mobilise a community of practice; ii) to promote critical engagement; iii) to strengthen research capacity; and iv) to inform and transform policy and practice.

In 2018 representatives of the RRC from the UK's Open University (OU), Christian Aid, INTRAC, Participatory Research in Asia (PRIA, India), Praxis Institute for Participatory Practices (PRAXIS, India) and the University of Victoria (Canada) came together to conduct a programme of strategic research and capacity strengthening for the UK's primary research funder, UK Research and Innovation (UKRI). The aim of the programme was to inform UKRI's efforts to understand and improve 'fair and equitable research partnerships' (see UKCDS 2017) within the context of their programmes funded through Official Development Assistance (ODA)[2]. The RRC drew

[1] https://rethinkingresearchcollaborative.com
[2] This was partly a response to criticism of ODA-compliance in UKRI's programmes in a review by the Independent Commission for Aid Impact (ICAI 2017)

on its wide trans-national networks to elicit a 'partners' perspective' on participation in research partnerships funded by the UK and involving partnerships with UK-based academics. Three types of 'partner' were targeted: i) academic institutions based in the Global South; ii) civil society organisations based in the Global South; and, iii) INGOs and other UK-based international organisations providing research capacity building or playing a brokering role between the other partner groups and UK-based academics/research funders.

Eight principles for fair and equitable research partnerships were generated through a three-stage process[3].

First, twenty seven (27) existing resources documenting best practice for research partnerships were reviewed and synthesised, with lessons and recommendations identified for six stakeholder groups: i) UK-based research funders and policymakers; ii) UK-based academics and university managers; iii) academics from the Global South; iv) research brokers and capacity building providers; v) INGOs and vi) civil society practitioners from the Global South.

Second, rapid qualitative data was collected over a three-week period through a purposeful sample of RRC network members across Africa, Asia, Latin America and Europe. Contributions were received in total from 59 people from 25 countries and regions. Fifteen (15) people took part in webinar group interviews; 19 in individual interviews; and 25 made written contributions.

Third, thirty-four (34) representatives of the six stakeholder groups attended a one-day round table event. Findings from the research and literature review were shared. Participants were split into their stakeholder groups to discuss the implications of the findings for development of principles and the capacity needs of their particular group for translating the principles into practice. Through the discussions, a draft version of eight principles were identified. The RRC team then worked to refine the principles which were shared with round table and research participants for validation.

[3] For an extensive overview of the methodology, see the supplementary document available at XXX

The eight principles, which emerged from the review, primary data collection and roundtable discussion are as follows:

1. **Put poverty first.** Constantly question how research is addressing the end goal of reducing poverty, through better design and evaluation of responsive pathways to development impact.

2. **Critically engage with context(s).** Consider the global representativeness of partnerships and governance systems and commit to strengthening research ecosystems in the Global South.

3. **Redress evidence hierarchies.** Incentivise intellectual leadership by Southern-based academics and civil society practitioners and engage communities throughout.

4. **Adapt and respond.** Take an adaptive approach that is responsive to context.

5. **Respect diversity of knowledge and skills.** Take time to explore the knowledge, skills and experience that each partner brings and consider different ways of representing research.

6. **Commit to transparency.** Put in place a code of conduct or memorandum of understanding that commits to transparency in all aspects of the project administration and budgeting.

7. **Invest in relationships.** Create spaces and commit funded time to establish, nurture and sustain relationships at the individual and institutional level.

8. **Keep learning.** Reflect critically within and beyond the partnership.

Recognizing that principles alone can be meaningless, the RRC drew on the research, resource review and round table discussions to develop a range of learning modules

and capacity resources targeted to the six stakeholder groups. A learning case study was also developed to reflect critically on the nature of participation in the project itself.

Extending this commitment to critical reflection to this article, the following section draws on the overlapping fields of systems thinking and complexity theory (e.g. Prigogine 1997; Checkland and Scholes 2004; Stacey 2010; Coleman et al 2011; Johnson and Boulton 2013; Boulton et al 2015; Burns and Worlsley 2015) to interrogate the eight principles in relation to a systems approach. While exploring the potential of the principles to contribute to a renewed conceptualisation of research collaboration, we also highlight the limitations of the principles in their current form and draw on the notion of 'emergence' to suggest how they might be expanded.

3. Systems thinking and complexity theory

All bodies of knowledge have a social context and history (Law and Urry 2004; Latour 2005). The literature on research partnerships for global development is no exception (see recent reviews e.g. Fransman 2018, RRC 2018, Fransman and Newman 2019). Grounded in the theory and practice of development planning, which itself builds on the fields of evaluation and management studies, it tends to adopt a 'planned interventionist' stance, which in turn takes a modernist view of the world as measurable, predictable and *knowable* with clear chains of cause-and-effect. It assumes the possibility of controlling and evaluating static variables to inform linear change processes (Boulton et al 2015; Burns and Worlsley 2015) and tends to promote a moral rhetoric about 'transparency', 'accountability', and 'value for money' (Mowles 2013). These assumptions give birth to a logic of *effectiveness* and a preoccupation with identifying 'best practice'. In the UK context, this logic was substantiated in the late 1990s through the emphasis of Tony Blair's government on 'evidence-informed policy' and the establishment of several 'What Works' Centers, still in operation today (Nesta/Alliance for Useful Evidence 2016). It also implies a 'methods-driven,' rather than 'problem-driven,' approach to research – as "ever more sophisticated methods to uncover these causal chains in order to analyse problems and then design, predict, and control the future." (Boulton et al 2015: 48).

In the partnership literature, this results in the idea of the 'research partnership' as a relatively autonomous entity which serves as a mechanism for implementing a relatively autonomous and linear 'research process' that may or may not extend into 'impact' on policy or practice. Partnerships are presented as a machine with parts comprised of two or more 'partners' who might bring to the partnership a range of perspectives and practices from their professional and/or personal lives, but are essentially agents of change within the partnership. Understand the mechanics, for instance the motivations of the partners and their common goals, and you will understand how partnerships can deliver on these. Understand the conflicts between the agendas, understandings or professional practices of partners, and you might be able to engineer, oil or rewire them or at least explain why breakdowns occur. However, even the most seemingly simplistic partnerships between just two organisations (e.g. a university and international INGO) based in a single context (e.g. the UK) tend to defy this logic (see Fransman and Newman 2019). Additional actors including funders and other research stakeholders enter the scene, influencing how funding is administered and research incentivised. Contexts change in response to world events and evolving policy. Organisations re-strategise and are restructured, and the individuals representing those organisations inhabit diverse positions of power and bring with them a wide range of personal, as well as professional, understandings, agendas, practices and identities. High staff-turnover in both sectors means that actors are frequently replaced and those who remain don't always act rationally, but embody values, emotion, imagination and conflict or "the ordinary politics of daily life" (Stacey 2010: 73). This makes prediction almost impossible and the prospect of guidelines for 'best practice' seem at best naïve.

In response, critics have drawn on complexity theory (the application of complexity sciences to the social world), and its more applied manifestation in 'systems thinking,' to propose that the world and institutions within it might be better understood as dynamic and unstable systems of interconnected actors, shaped by spatial and historical contexts. With its roots in the patterns of nature, the history of complexity thinking reaches back thousands of years and resonates with many indigenous patterns of sense-making. After falling out of favour with the advent of European

rationalism in the early eighteenth century, it enjoyed a revival in the twentieth century, first in the natural and then the social sciences. In development studies, its resurgence from the early 2000s corresponded with the emergence of the sustainability discourse and an increased focus on ecosystems; both literal and metaphorical to make sense of complex global development processes (Burns and Worlsley 2015).

Through a complexity lens, 'partnership' might present as a verb rather than a noun (see Fransman and Newman 2019); a set of relationships framed by particular contexts and in a continual process of 'becoming'. Such a perspective offers potential for novel and surprising outcomes to emerge from partnership processes. But it also creates problems for both the idea of the partnership as a vehicle for development intervention and for efforts to improve the functionality of the partnership itself. In response, a spectrum of thinkers have explored how complexity theory might contribute to such aims.

At the most interventionist end of the scale, 'systems thinking' has become an increasingly popular approach to adaptive programing for development. For example, aspects of complexity have been incorporated into Theories of Change (TOC) frameworks through more in-depth analyses of context and critical attention to assumptions (Vogel 2012). Although, some have argued that in this approach, complexity is conflated with context and separated from the configuration and processes of partnerships so that the variables to be considered are merely increased rather than reordered (Burns and Worlsley 2015). Others have developed approaches grounded in critical realism such as 'complex adaptive theory' and 'complexity-consistent theory,' which focus on local level interactions and identify 'local rules' (Westhorpe 2012) or 'generative mechanisms' (Callaghan 2008) to claim a degree of predictability. Still others have taken more process-oriented and adaptive approaches, such as those of 'systematic action research' and 'nurtured emergent development' (Burns and Worlsley 2015); or 'dynamical systems theory' within contexts of intractable conflict (Coleman et al 2011). These approaches have focused on *tracking* or *catalysing* change rather than *predicting* or *planning* change. They have identified key principles such as: 'seeing the system' (reflecting on the patterns that inform

relationships and distribute knowledge, power and participation – see also Snowden 2010 on identifying the disposition of different types of system); recognising multiple narratives (promoting deliberation and learning through critical reflection); building and sustaining networks and relationships; and identifying, taking action to encourage and monitor potential catalysts for change over time. However, some critics maintain that even these more integrated approaches position complexity as "just another volitional tool in the evaluator's toolbox subsumed under the dominant understanding of evaluation, as a logical, rational activity" (Mowles 2014: 160 and see also Stacey 2010). For these 'harder' complexity theorists the artificial boundary of the system is unhelpful, even as an analytical tool. Instead, they suggest that embracing ideas and feelings such as multiplicity, uncertainty, ambiguity and paradox, and reflecting collectively and continually, can help participants to ride the wave of complexity in partnerships with a deeper ability to navigate conflict and change. This 'complex' approach might be seen as more practice-oriented, as opposed to process, context or outcomes oriented. It also chimes with deep-rooted traditions of participatory and action research as well as arts-based approaches that foreground critical reflection and the interplay of power with multiple positions, perspectives and modes of representation.

To practice complexity in partnerships, we identify four key ideas from complexity theory, which might serve as a framework to support critical reflection.

Starting conditions and assumptions

Partnerships are never plucked from thin air but have an origin story, which might in turn build on any number of prequel stories. These 'starting conditions' might materialise in the context of a previous research project, or through discussions at a conference, or in the mechanics of a funding call, or on a partnership-brokering platform, or through a long-established friendship and the desire to work together, or in a moment of shared outrage or collective imagination. In all likelihood there are numerous points of origin in any one partnership. Yet each of these will set in motion a series of conditions and assumptions that will fix the boundaries (however porous and ephemeral) of the partnership itself. This on-going process of (re)framing occurs

through the amplification of localised interactions that may be initially determined through starting conditions, but can evolve in quite unanticipated ways. For instance, the starting conditions for the UK's £1.5 billion investment in research to address 'global challenges' are grounded in the redistribution of a significant portion of the UK's ODA budget into the UK's higher education sector. This was framed by a number of interrelated ideological agendas and assumptions, for example around the status of British scientific excellence as an invaluable resource to address global challenges, and around the potential exportation of British scientific expertise and infrastructure as a means of advancing the UK's global presence. But they were also framed by the privileging of a challenge-focused (as opposed to methodology-focused) approach, which in turn encouraged interdisciplinary research beyond academic silos to solve 'real world problems' and engagement with practitioners to inform 'impact' in terms of changes to policy and practice. These competing assumptions generated a raft of structures and processes (e.g. policy and strategy, funding mechanisms, new systems of peer review and evaluation), roles and relationships (e.g. fund managers, 'challenge leaders', capacity providers, research hubs, centres and partnerships), events (e.g. networking and showcasing conferences) artefacts (e.g. application systems, networking platforms, toolkits) and discourses (e.g. around 'global challenge research'). Much of this was inherited from existing structures, identities, relationships, artefacts and discourses. But new elements also emerged. For example, assessments of 'ODA-compliance' (see ICAI 2017, 2019) led to the realisation that funds were being primarily spent in the UK and on furthering academic excellence, rather than informing development practice. This fuelled a new discourse around 'fair and equitable collaboration'. And this in turn, led to new initiatives, such as certain funding calls which invited applications led by academics in the Global South, the incorporation of development practitioners into strategic committees and review colleges, and better coordination with research funders based in the Global South. However, such initiatives were arguably also undermined by persisting conditions; for instance, bureaucratic structures made it very hard for organisations in the Global South to meet basic administrative conditions, such as oversight of due diligence processes or inequitable visa allocation, which in turn limited the access of many Africans to UK-based opportunities (McInroy et al 2018).

So how does analysis of the multifarious implications of starting conditions help us to understand and improve research partnerships? Complexity theorists suggest that complex systems range between states that are too chaotic to allow strategic sense-making, and states that have settled into identifiable patterns but are locked-in and rigid (Snowden 2010; Boulton et al 2015). It is the middle ground between these extremes, characterised by diversity and multiple possible pathways (and sometimes referred to as the 'edge of chaos' – see Ramalingam 2013), where action can be taken. However, this action demands recognition of starting conditions and assumptions as well as an explicit moral judgement of the values that will frame the action. A good example of how this might work in practice is the International Development Research Centre (IDRC)'s Research Quality Plus (RQ+) programme (see IDRC 2016), which makes an explicit moral judgment that scientific merit is a necessary but insufficient indicator of research quality and that development stakeholders should play a central role in determining whether research is salient and legitimate. In response, RQ+ develops an evaluation tool that invites research evaluators to identify key contextual factors that frame research impact, to articulate their own dimensions of quality and to justify their use of rubrics and evidence.

The first RRC Principle ('Put Poverty First') was framed by a preoccupation with 'starting conditions'. Research should be grounded in existing efforts to act on poverty (see Newman et al 2019) and by linking research and practice, collaboration should be a vehicle to achieve this. As with the RQ+ tool, this principle was intended to act as an explicit recognition of the values and assumptions that frame the RRC approach. The choice of the somewhat out-dated concept of 'poverty' (as opposed to the more political notions of social or environmental justice, which the RRC favours) was deliberate. A focus on poverty, aligns the principle to the logic of ODA and this logic was the primary vehicle for advocating for fairness and equity in the funding programme. However, this strategic choice of terminology also situates the principles within a very specific context and so limits their universality. This suggest a tension between complexity thinking and the very idea of 'principles', which are by nature fixed and singular despite the multiplicity of positions they obscure.

Context and system dynamics

Much of the research partnership literature acknowledges the influence of 'context', whether framed by geo-politics, national or international policy, local socio-cultural norms, infrastructures and resource availability or humanitarian events. However, context is usually presented as a relatively static background to the partnership or research process, comprising of presents or recent pasts and bounded geographies. It provides a reference point to explain certain influences but does not change itself over the course of the collaboration. In contrast, complexity theory offers a more integrated approach to understanding contexts as intrinsically bound up in the dynamics of collaboration.

This landscape or *state space*, which forms both context and system, is characterised by chaos, which over time might settle into discernable *patterns* or configurations of relationships. State space is punctured by dips in the terrain or *attractor basins*, which act with unfolding *events* to create tipping points that pull the patterns into new regimes and from which significant effort is required to re-emerge (Coleman uses the example of a ball that roles quite easily into a dip but can only be pushed up and out with some considerable force – Coleman 2011). Change occurs as patterns stabilize within these new regimes into new states before once again being tipped into disruption. While approaches using soft systems thinking (e.g. Checkland and Scholes 2001) ground their analysis in the patterns or fixed relationships between different variables, complexity theory focuses on the disruption and reconfiguration of patterns: "the future is a dance between patterns and events" (Boulton et al 2015: 29). The contextual dynamics, which inform this relationship, are therefore the focus of analysis. This is partly historical. The trajectory of change within the system is set in motion by the starting conditions discussed above and so the order of change is *path dependent.* However, the spatial and cultural specificities of context will also influence how sequences of events unfold with different effects in different places. Complexity theorists also stress that the nature and pace of change is not always consistent. Change is *episodic*. It unfolds in fits and starts with certain events having a more powerful effect than others and different types of change unfolding over different time periods. For instance, training programmes developed to shift cultures versus the more immediate incentives of a new funding call. Change is also *multi-scalar*,

manifesting in different ways depending on size, for example, the different communication practices that might be appropriate for a partnership of two versus a 20-partner consortium.

A final foundational concept is the notion of feedback loops, which determine how the outputs of a system (e.g. the change affected by the impact of events on patterns) are fed back as inputs (e.g. the reconfigured patterns which create new state space). Feedback loops can be negative or positive. Negative feedback loops will balance an output to self-regulate the system and maintain the status quo. Positive feedback loops reinforce system affects and lead to either growth or decay. A good example of both types of feedback loops in action can be observed in the efforts of the Development Assistance Research Council (RAWOO) of the Netherlands to facilitate more equal North-South research collaboration in the early 2000s (see Kok et al 2017 and Bradley 2017). The initiative was informed by identification of an existing positive feedback loop in Northern-funded international development research:

> The North's focus on universally applicable, biomedical insights and technological solutions and scientific publications as a measure of excellence could hamper the emergence of national research systems in the South by orienting talented local researchers to international agendas, instead of local needs and societal relevance. This could fuel a vicious cycle in which local authorities did not engage with research because it did not fit their needs, and Southern researchers became internationally focused and locally isolated because of a lack of local investment. (Kok et al 2017: 16)

This observation led to a government-funded initiative to support 'demand-driven and locally led' research that recognized and nurtured Southern research capacity. However, despite the initial success of the programme, it was discontinued after just a few years. According to Maarten Kok and colleagues (Kok et al 2017), this was largely due to the collapse of the programme's 'sponsorship constellation', which was undermined by the restructuring of the Netherlands' international development policy, including the disbanding of RAWOO. Another issue was around buy-in of Dutch

researchers, as many Southern-led research agendas were not of interest and the minimal funding available to them was 'not worth the trouble'. As a result, by 2007 the Netherlands had replaced the Southern-led approach to research with one of 'enlightened self-interest' (Bradley 2017). This example of a negative feedback loop was informed by a combination of factors including academic protest and the rise of a more conservative political climate in the Netherlands.

So how can this expanded understanding of context and system dynamics help our understanding of and efforts to improve research collaboration? Complexity theory emphasises that we cannot understand how the future may unfold if we ignore the detail – the contingent and local processes that create change. As Jean Boulton and colleagues propose, this suggests a complexity-informed context analysis involving: i) looking back (to recognise history and path-dependency); ii) looking up and around (to 'see the system' and get a sense of its dynamics); iii) looking down (to identify the particularities of local contexts); and iv) looking forward (to monitor and respond to emerging factors). Together, this implies a responsive and adaptive approach both to studying and doing research collaboration.

RRC Principle 2 ('Critically Engage with Context') responds to this in-depth analysis of contexts and system dynamics, recognising that contexts are complex and will evolve alongside and through a collaboration. The focus of the principle is on the interaction of UKRI's research system with multiple contexts: first, the UK's own political context; second, the representation of different geographical contexts within strategic agenda-setting and decision making in the UK; and third, the affect of the UK's research system on other national contexts (national and regional research ecosystems in the Global South). Complexity thinking might advance this principle by assessing not only recognition and representation of existing context (through context mapping) but also the affect of research on emergent contexts. For instance, what are the effects of supporting a small pool of often elite scholars and institutions from the Global South on broader inequalities in their countries and regions?

Difference

While a 'system' is often misrepresented as something relatively tangible or bounded (such as a community, organisation, sector, policy or partnership), even soft systems thinkers are quick to point out that systems should not be perceived as real entities but rather as sets of relationships which have a coherence to those looking at them (Checkland and Scholes 2004). In this way, setting the parameters of a system is important for the purpose of framing analysis; but it is as important to recognise what it excludes as includes. Some complexity theorists such as Ralph Stacey (2010) even argue against using the term 'system' altogether as it creates the illusion of coherence and stability. Instead, they suggest that the focus should be on the micro-level interactions that catalyse change. In this, the idea of *difference* is paramount: "It is detail and variation coupled with interconnection that provide the fuel for innovation, evaluation, change and learning." (Boulton et al 2015: 29) When individual entities are the same they are likely to settle into stable patterns, but where there is difference there are incentives to alter strategies of interaction, which can trigger change. The partnership literature provides some helpful insight into the idea of difference, focusing in particular on collaboration across disciplines, sectors and national contexts. The notion of 'productive tensions' was proposed to show how the same conflict that can obstruct collaboration between academics and INGO practitioners can also spark new revelations (Fransman and Newman 2019) while the idea of 'bounded mutuality' (Georgalakis and Rose 2019) acknowledges that while moments of commonality can be created and nurtured, difference is on-going. However, the partnership literature also tends to frame difference in relation to fixed identities or variables, which broadly retain the same interests, cultures and characteristics over the course of the collaboration. In contrast, complexity theory argues that variables themselves are often indefinite or ephemeral and can change through interaction with the collaboration (or in Karen Barad's term, *intra-action*, with the relationship itself affecting change on the subjects, Barad 2007). Examples of this might include one member of staff replacing another in a partnership; or a change of roles or identity in a single individual. An INGO practitioner might develop an academic identity or an academic develop an activist identity either through direct training or by engaging with organisational cultures and resources. This might eventually prompt that individual to change sectors or engage in further study. Change can also occur in non-human identities. For example, a few UK-based INGOs have recently registered

themselves formally as Research Institutes to enable access to grant funding usually restricted to academic organisations. This conflict between the reliance on difference (as the basis for any collaboration) and the expectation that partnerships should develop strong, fixed and sustainable identities (an assumption embedded in the idea of 'sustained interactivity' – Georgalakis and Rose 2019) introduces a key paradox as partnerships are expected to innovate and evolve in order to retain and even strengthen their identities and status. Complexity theory suggests that this type of paradox is actually a valuable resource for critical reflection and process-oriented change management (Mowles 2015) though it does call into question the idea of the research partnership as opposed to a more fluid idea of research collaboration.

While recognising difference can help partners work better together, it is also crucial to highlight that difference is seldom weighted equally; rather, it is ordered by power in relation to institutional or socio-cultural norms and assumptions, which generate hierarchies of knowledge. Whose expertise is valued in relation to the ways in which research is framed in a partnership? And does embracing difference necessarily redress these hierarchies? For example, in an effort to improve the participation of academics from the Global South and development practitioners in decision-making around the funding of global challenge research, UKRI established a benchmark to ensure that at least a third of peer reviewers were non UK-based academics. While this increased the parity between UK-based academics and other research stakeholders, it did not necessarily shift the criteria for decision making away from UK-based ideas of what is valued in academic research. As an INGO researcher reflected on her experience in an academic peer-review panel, she might be present as a participant but is still excluded if her understanding of research quality differs from the majority academic perspective (Newman et al 2019: 28). Complexity theory is therefore aligned with participatory approaches that demand recognition of and engagement with power such as 'systematic action research' and 'nurtured emergent development' (Burns and Worlsley 2015). Others, such as scholars at the UK's University of Hertfordshire have situated techniques from group therapy within a complexity approach to facilitate 'complex responsive processes of relating' (Stacey, Griffin and Shaw 2000, Stacey 2010, Mowles 2015) which situate people and their social practices at the heart of research and interrogate their value judgements, languages and

cultures and the relationships of power they are embroiled within. Although Chris Mowles is careful to note that critical reflection and reflexivity does not automatically lead to the good but can also disrupt, provoking feelings of shame, guilt and anxiety. (Mowles 2015).

RRC Principles 3 ('Redress Evidence Hierarchies'), 5 ('Respect Diversity') and 7 ('Invest in the Relationship') all respond to difference and suggest the importance of participation, critical reflection and reflexivity (thinking about what is going on and thinking about how we are thinking about what is going on individually and collectively and the values and assumptions this involves.) However, the principles and framings of the RRC's research and capacity outputs all relied on fixed identities: the UK-based academics, UK-based funders and the different groups of 'partners'. This framing highlights the pervasive influence of the mainstream 'partnership' discourse on a project which attempted to embrace a more complex understanding of collaboration. It also recognises the importance of 'strategic essentialism' (Spivek 1990) that is necessary to give formal recognition to excluded groups. But at the same time, these categories are in reality diverse, porous and shifting (see Fransman and Newman 2019). While an additional group of stakeholders was identified and incorporated over the course of the project ('research funders and capacity-building networks based in and across the global South'), the project and principles did not allow for the hybrid and evolving nature of some of these identities.

Emergence

If *difference* is key to affecting change then the idea of *emergence* grapples with the nature of this change and how it unfolds in time and space. Jean Boulton and colleagues (Boulton et al 2015) explain how difference can lead to three types of transformation. First, unfolding change or *self-regulation,* which continues the time sequence so that the variables and their relationships remain the same but their absolute values change over time. For example, in the case of the UK's peer-review colleges discussed above, efforts to expand diversity resulted in greater representation of non-UK-based academics on panels but did not significantly affect the UK-based academic culture, which continues to dictate how decisions are made. Second, change can be catalysed

by *self-organisation* through which the variables retain their identities but reconfigure their relationships. An example of this in the UK context has been a change to funding policy to allow academics from the Global South to lead projects under certain funding calls and without having to partner with a UK-based academic. So academics retain their status as a member of staff at a Southern university but can assume the previously unpermitted role of 'Principal Investigator,' as opposed to the lower status roles of 'Co-Investigator' (CI), 'Partner' or 'Collaborator,' which are defined in relation to the UK-based lead applicant. And finally, *evolutionary change* occurs when the configuration of relationships, the variables and the state space of the system are themselves transformed. An example of this is the relatively recent recognition that quality controlled research can be produced outside of academia, for example, in INGOs (Hayman et al 2016; Smith 2016; Travers 2016; BOND 2019). Broader movements centred on 'cognitive justice' (de Sousa Santos 2014), 'knowledge democracy' in the face of 'epistemicide' (Hall and Tandon 2017) and post development (e.g. Ziai, 2013; Schöneberg 2019) have also acknowledged the multiple alternative knowledge and research approaches to the mainstream Northern model.

In collaborative initiatives that take these approaches into account, research is not just reproduced through collaboration; rather the very nature of knowledge-for-global-development is challenged and reconfigured. Though while new epistemologies and ontologies may come to light through smaller collaborations, it is a lot harder to change the state space of broader academic disciplines, let alone research systems. Aspirations to this final type of emergent change align with the idea of 'transformative change' (which reconfigures system dynamics and power relationships) as opposed to 'ameliorative change' (which creates improvements within unchanged power relationships) – see Burns and Worlsley 2015.

Within international development practice, the recognition that complexity and uncertainty are not compatible with inflexible linear planning models has given rise to a renewed focus on Adaptive Management (Mistry et al. 2011), which recognises the inevitability of change in a programme and allows for iterative feedback learning and experimentation, in response to emerging knowledge (Mistry et al. 2011; Rondinelli 2013; Valters, Cummings, and Nixon 2016). As Boulton et al (2015) point out; an

emergent approach to complexity also chimes with older traditions of participatory and Action Research (see Reason and Bradbury 2001). This prompts a call for research, which support methods that: i) can trace and represent the development of situations over time; ii) include as many views as to what is happening and why and from the people being researched as well as researchers; iii) support critical processes of meaning-making that facilitate discussion and the bringing together of multiple perspectives; iv) try to capture and follow emergent phenomenon and the unexpected and that do not overly constrain what we are viewing; and, v) explore around the issue of situation not just within it to expose causes with multiple strands, structures, key events etc. (Boulton et al 2015: 112)

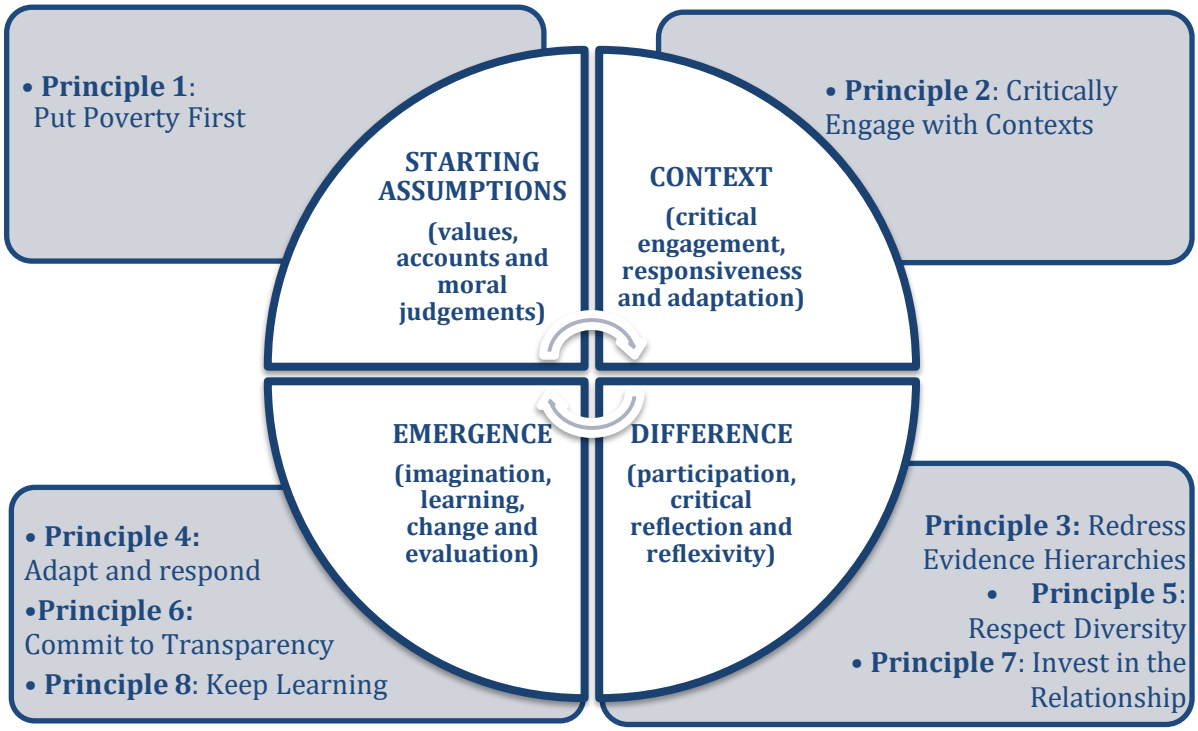
Such an approach resonates with RRC Principles 4 ('Adapt and Respond'), 6 ('Commit to Transparency') and 8 ('Keep Learning') which suggest the need for an open and collective approach to emergence in research collaborations; in the wider research and development sectors in which they are situated and in the individual participants as well as their organisations. While the project conducted by the RRC was designed to be iterative, in practice, this did not go quite to plan. Due to delays and limited funding (meaning the work had to fit in with the CIs' other on-going commitments) each work stream was rushed, with activities bleeding into each other and with little time to discuss the implications of one activity for the next. These challenges reinforce the importance of taking an adaptive approach to collaborative research, which is only likely to work when partners have already developed shared understandings, agendas and ways of working, as well as deep trust. Likewise, a commitment to emergence sits in tension with the boundaries of funded activities and suggests the need to understand research and especially impact, not just in relation to a single project but as part of a longer-term collective agenda which might evolve across several projects, teams, outputs and events. This challenges current practices of attribution, suggesting a need for a new approach to impact assessment (Newman et al 2019). Other points of emergence included *self-regulation* of the UKRI's global challenge research agenda and of the RRC itself as a legitimate and increasingly influential entity within the knowledge-for-development state space, and *self-organisation* of UKRI's research activity with greater attention to 'fair and equitable collaboration' and of the RRC as a network with newly identified partners (including Southern-based research funders

and capacity providers). Truly evolutionary or *transformative change* was far harder to achieve through an initiative of such limited scale and especially in one so locked in to dominant patterns around UK-based research funding and policy.

4. A systemic framework for exploring research collaboration

These four central ideas inform a framework, which can be used to advance our understandings and practice of research collaboration. We map the RRC's Principles for Fair and Equitable Research Collaboration on to this framework in Figure 1 below.

Figure 1 A systemic approach to research collaboration



As the discussion in the previous section has illustrated, a systemic approach is broadly compatible with the principles developed by the RRC. The tensions identified are largely due to the rhetoric of partnerships used to frame the principles and by the nature of 'principles' itself as an artefact to inform policy and practice. By creating the illusion of universality and classifying fluid identities into fixed categories, the principles obscure the politics, partiality and temporality of specific contexts (in this case the UK's research-for-development ecosystem) and political decisions (such as the focus on 'poverty' in line with the language of ODA).

To mitigate the illusion of universality, stability and singularity afforded by the principles (as a necessary artefact for advocacy) the RRC also produced a number of accompanying resources, which also drew on the tenants of complexity thinking. These included six capacity modules targeted to different stakeholder groups to support translation of the principles into practice[4]. These modules are not prescriptive but reflexive in nature and designed to provide guidance to the target group but also to enhance *other groups*' understanding of each target stakeholder by highlighting their contribution and the challenges they face. The resources also included a collectively negotiated 'learning case study, which reflected on the RRC's collaboration in this project[5]. This output, which was also part of the process gave space to the feelings of anxiety, exploitation and resentment, which often accompany complex collaborations alongside the more positive feelings of passion, inspiration and belonging to a collective struggle. While such negative emotions (often overlooked in analyses of partnerships) can be damaging, they also offer opportunities for genuine critical reflection and learning, especially when deep trust has been built through shared histories that strengthen connections between individuals and the collective; subjective experience and research artefacts; histories, presents and imagined futures.

In this way, the example of the RRC project illustrates both the potential of a systems approach to advance the thinking and practice of research collaboration but also of how this approach can be undermined by the persistence of artefacts such as principles, publications and the formal representation of partnerships themselves. This tension is not problematic in itself, but rather a reminder of the complexity and partiality of our instruments and outputs and a caution as to how we approach them.

5. Looking forward: from efficient partnerships to fair collaboration

[4] https://www.christianaid.org.uk/about-us/programme-policy-practice/resources-fair-and-equitable-development-research-partnerships
[5] https://www.christianaid.org.uk/sites/default/files/2018-09/Fair-equitable-partnerships-case-study-RRC-Sept-18_0.pdf

This article has drawn on ideas from systems thinking and complexity theory as well as the experiences of the RRC to expose some of the limitations of the 'partnership' approach that dominates the literature on research collaboration. Far from the suggestion that partnerships are simple, bounded entities that can be controlled and made to work effectively through careful planning, our learning has shown that the dominant discourse around 'partnerships' and especially those framed by a rhetoric of *effectiveness* is ultimately unhelpful. Even where open, democratic and iterative processes are carefully planned, collaboration is grounded in difference and will therefore always generate unanticipated outcomes – both positive and negative. We argue that an alternative discourse, based on an aspiration towards *fairness and equity* is a more helpful way of framing collaboration. Given that these are ideals rather than realisable aspirations, any commitment to social, cognitive or environmental justice necessitates an on-going critical engagement with power as well as responsiveness to the changing contexts that shape power and order knowledge. This in turn suggests an approach based on responsiveness to histories and context, adaptation and continuous critical reflection: looking back, down and around as well as at ourselves and at each other and looking forward in a bid to rethink research collaboration in relation to uncertain futures.

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