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Understanding resilience in sustainable development: Rallying call or siren song?

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Abstract

This article asks how the concept of resilience has been used in development studies. Set amidst the rise of resilience in sustainable development, it offers insights for scholars and policymakers, alike. Sampling 419 journal articles from 2017 to 2022, it uses Kuhnian paradigms to analyse development knowledge production on resilience. This produces three key findings. First is the absence of a coherent resilience paradigm (with shared definitions, problems and methods) in development studies. Second is its use, instead, by incumbent development paradigms in piecemeal fashion to extend and/or repackage pre-existing arguments. Third are ensuing possibilities for resilience as both a rallying call and siren song in sustainable development. Ultimately, resilience-based research and policy discourses open vital space for collective action across interdisciplinary and international divides. However, a lack of critical awareness of its non-uniform use can produce more harm than help. If the language of resilience is to advance collective prospects for development cooperation and climate action, then it will help to know precisely what we each are talking about.

KEYWORDS

climate policy, development cooperation, development policy, development studies, Kuhnian paradigms, politics of knowledge production, resilience, sustainable development

1 | INTRODUCTION

At the opening plenary of the 2022 Development Studies Association (DSA) annual conference, Aromar Revi pointed to a new buzzword on the horizon: 'resilience'. For those fluent in the language of climate action and sustainability, 'resilience' may be as obvious as adaptation or mitigation. For others, however, the concept may be ambiguous or unclear. This is by no means an indictment against resilience. After all, 'development' is no different; as potentially perplexing to those outside (e.g., 'do you mean child development?') as it is obvious to those within.¹ However, this raises a basic need for clarity amidst the rise of

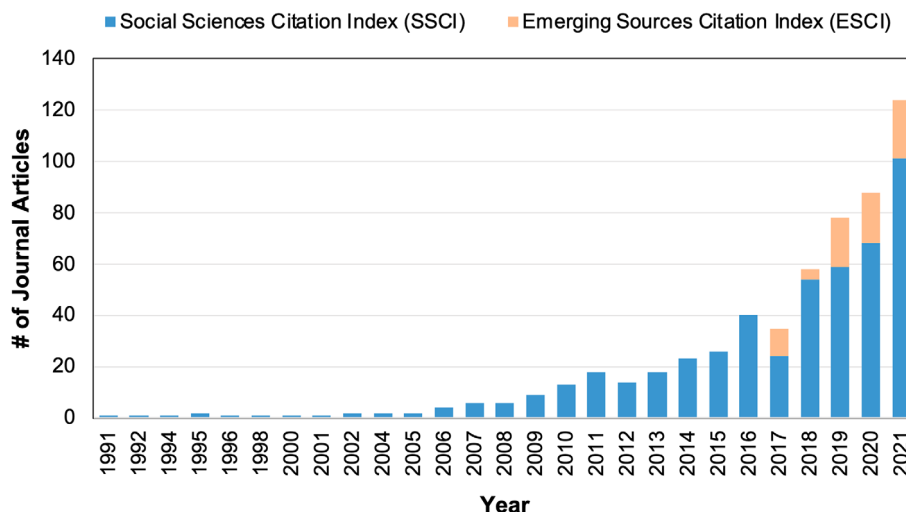
resilience. And as charted in Figure 1, development studies' use of resilience is indeed rising.

Consequently, this study on resilience in development studies serves scholars and policymakers, alike. Set amidst the rise of resilience in sustainable development, this study offers a guide for the perplexed (to echo Schumacher, 1977). For those first encountering resilience, the aim here is simple: *how has the concept of resilience been used in development studies?* The ensuing analysis lays out a basic understanding of resilience in development. How is resilience defined and applied across diverse development contexts? What opportunities and challenges can be identified?

These questions are also relevant for those already engaging with resilience. Amidst its rising popularity, *how can resilience be used more effectively for sustainable development?* Is the concept used consistently

¹It should be noted, however, that both 'resilience' and 'development' remain highly contested concepts (e.g., Ferguson et al., 2020; Sachs, 2022).

FIGURE 1 The growing presence of resilience policy in development studies journals (data: Web of Science).



enough for constructive or meaningful exchange? This rise of resilience has further not come without concerns of its present uses (e.g., Hodgson et al., 2015; Leach, 2008; Volante & Klinger, 2022; Wares, 2022). Critically examining the use of resilience in development studies thus contributes to its theoretical and practical effectiveness. As noted by Ekblad (2016), a well-executed review can steer a field towards more fruitful—or at least less wasteful—directions.

Indeed, it is worth noting prior meta-reviews responding to the rise of resilience in development research and policy. These largely concentrate on specific sectors within development. For example, Fook (2017) surveys community-based approaches to climate resilience. This community dimension also manifests in rural development, where Roberts et al. (2017) examine UK and EU resilience policy agendas on technology for rural resilience. Simultaneously, Béné et al. (2018) map the emergence of ‘urban resilience’ in urban planning and development, with Verma et al. (2023) adding a recent view from Polish urban policy. This rise of resilience also goes beyond urban/rural dimensions. Flagging growing works on health resilience, Khosla (2017) unpacks its social, psychological, and clinical dimensions. Wang et al. (2021) further shift from health to ecosystem resilience in reviewing works on forest fire mitigation and adaptation to climate change in the Himalayas.

These works illustrate the rapid spread of resilience across development research and policy. However, while each covers a specific part, no one addresses development studies as a whole. This article accordingly contributes a holistic view of ‘resilience’ in development studies. Applying Thomas Kuhn’s seminal view of paradigmatic knowledge production, to what extent does ‘resilience’ constitute its own paradigm within development studies? Tracing the career of resilience in development knowledge production, it adds a new chapter to the political and intellectual history of development studies (e.g., Amin et al., 1978; Gendzier, 1985; Hettne, 1990; Larrain, 1989; Mkandawire, 2011; Packenham, 1973; Park, 2017; Preston, 1982).

Beyond development studies, this study also sits amidst analyses of the wider uses of resilience in international policy and international politics. Examples range from climate security (Ferguson, 2019) to

democracy (Holloway & Manwaring, 2023), peacebuilding (Aggestam & Eitrem Holmgren, 2022), regional governance (Korosteleva, 2020), and terrorism (Jore, 2023). Broadly tied to critical security studies, early critiques especially highlight the role of resilience in reproducing forms of neoliberal governance (e.g., Corry, 2014; Joseph, 2013; Walker & Cooper, 2011). However, critical scholars have since opened less monolithic and deterministic views into resilience’s multifaceted manifestations (e.g., Bourbeau, 2018; Ferguson, 2019; Ferguson & Wollersheim, 2023; Wandji, 2019).

Correspondingly, this study contributes a view of resilience from development studies. Tracing the use of resilience across 419 journal articles from 2017 to 2022, it finds little in the way of a coherent resilience paradigm. Resilience is instead used by pre-existing development paradigms in piecemeal fashion to extend and/or repackage their claims. At the same time, the widespread use of resilience opens shared grounds for sustainable development and collective action across international and interdisciplinary divides. However, an unawareness of its non-uniform use can produce more harm than help.

This article thus closes by calling for concerted monitoring and evaluation of resilience knowledge and policy production, itself. This does not imply a form of conceptual policing or homogenisation, but rather emphasises the critical need for mutual understanding to advance collective action. If the language of resilience is to advance shared prospects for sustainable development, then it will help to know precisely what we each are talking about.

2 | METHODS

2.1 | Analytical framework

This study applies methods from the history and philosophy of science to development studies to analyse knowledge production on ‘resilience’. Specifically, this article uses Thomas Kuhn’s (1996 [1962])

seminal model of academic knowledge production to ask whether resilience constitutes its own paradigm in development studies. In doing so, it follows on prior crossovers between the philosophy of science and development studies. Examples include Preston's (1982) use of Kuhn, Somjee's (1991) use of Popper, and Kvangraven's (2021) use of Lakatos.

Here, Kuhn's paradigms entail research communities operating on a shared set of premises, problems, and methods. This enables constructive knowledge production until internal theoretical tensions and external social conditions trigger a 'paradigm shift' in research agendas/orientations. A type of gestalt shift, a trademark example is the shift from a geocentric to heliocentric worldview during the Copernican revolution (see Kuhn, 1957).

To be clear, Kuhnian paradigms should not be conflated as necessarily being desirable nor sound. Indeed, Kuhn's analytical framework aims to deflate over-reaching claims on the superiority of scientific knowledge production (e.g., scientism). Science is instead resituated in society as a form of social practice. Originally examined in the contexts of natural science, these scientific claims enter even more contested waters in the contexts of social science. For example, Victorian British anthropology, German *Volkekunde* (ethnography), and US international relations all offer paradigmatic traits (*vis-à-vis* their shared premises, problems and methods). However, critical scholars also remind how each played a role in justifying and reproducing racism through social science (Acharya, 2022; Anievas et al., 2014; Gordon, 1988). The analytical merits of using Kuhnian paradigms to study academic knowledge production should thus not be misunderstood as implying the inherent superiority of any one paradigm—'scientific' or otherwise.

Rather, Kuhnian paradigms offer a framework to deconstruct the (i) premises, (ii) problems and (iii) methods underwriting knowledge production on resilience in development studies. The potential variation across each element allows us to disentangle and make sense of the many uses of resilience to be found. In particular, it sheds light on the extent to which resilience knowledge production entails a constructive, collective endeavour. An optimistic hypothesis here might posit that resilience is used in a uniform sense as a coherent resilience paradigm (e.g., Imperiale & Vanclay, 2021; Roberts & Sass, 2022). A negative hypothesis might similarly posit a new paradigm, but with perverse ends in reproducing social injustice and inequality. Alternatively, a null hypothesis might posit the lack of a shared paradigm at all. Instead, uses of resilience may give way to altogether different premises, problems, and methods.

When resituated in surrounding politics, this focus on knowledge production bears real-world implications. Academic knowledge plays an instrumental role in shaping reality(s). MacKenzie (2006) hence finds economic models acting like 'an engine, not a camera' in financial markets. As warned by Berlin (1969, p. 119), 'Over a hundred years ago, the German poet Heine warned the French not to underestimate the power of ideas: philosophical concepts nurtured in the stillness of a professor's study could destroy a civilisation'.

Echoing recent (re)discoveries of our acute environmental limits to growth and persisting neocolonial dependencies, knowledge is also shaped by particular realities. Academic knowledge production is a

social practice; a highly formalised language game (Wittgenstein, 2001 [1953]). But it is not an inclusive game. As noted by Diane Coyle regarding the gender gap in economics, 'It's not possible to do good social science if you are so unrepresentative of society' (Hartford, 2021, p. 1). Yet, entire continents and identities have been cast through academic ideas (Mudimbe, 1988; Said, 1978; Sud & Sánchez-Ancochea, 2022).

As reminded in epistemology, knowledge is value-laden in shaping (and being shaped by) partial realities (Anscombe, 1958; Feyerabend, 1993 [1975]; Kuhn, 1957; Park, 2016; Putnam, 2004). Disciplinary histories have notably traced the politics underwriting international, area, and development studies (e.g., Acharya & Buzan, 2010; Bamba, 2016; Engerman, 2007; Gilman, 2003; Park, 2020; Thakur & Vale, 2020; Tickner & Wæver, 2009; Zeleza, 1997). However, said politics does not remain secluded to the past. Calls to decolonise the curriculum (from the University of Capetown and beyond) remind of the persisting colonial legacies in academic knowledge production and the university (Nyamnjoh, 2017, 2022; Platzky Miller, 2020).

This article's contexts in the politics of knowledge production thus bears real-world consequences. The question of whose resilience knowledge matters bears a question of whose reality counts (Chambers, 1997). Academic knowledge production offers a channel for social control; whether via class reproduction (Bourdieu & Passeron, 1990), manufactured consent (Herman & Chomsky, 1988), or colonised minds (Amin, 1975; Nyerere, 1975). It is in these social and political contexts that the structure of resilience knowledge production bears implications for development research, policy, and practice.

2.2 | Empirical data

To populate this framework on resilience knowledge production, this study used bibliometric methods to compile a database of resilience-oriented development scholarship. Relying on tools from Web of Science, this entailed large-scale search, compilation, and coding of journal articles. Limited to journals categorised by Web of Science under 'development studies', it sampled publications from the past 5.5 years (1 January 2017–30 June 2022).

This time period was chosen in light of two factors. First was a compromise between empirical coverage and practical feasibility in analysing the sizeable volume of recent works (Figure 1). This means that a shortcoming arises in the limited insight offered into earlier manifestations of resilience. This longer intellectual and policy history of resilience in sustainable development remains a subject for future investigation.

The second factor behind the choice of time period reflects efforts to promote a more inclusive sample. Namely, sources were compiled here across two citation indices—the second of which starts only in 2017. The first is a 'gold standard' for scholarship: the Social Sciences Citation Index (SSCI). The second is the lesser-known Emerging Sources Citation Index (ESCI), established in 2017 to capture emerging markets in academic knowledge production. This structural hierarchy, echoing a global centre and periphery, is highly problematic in the political economy of knowledge production (Chou, 2014; Chou & Chan, 2017; Hanafi, 2011). For the purpose of this study,

TABLE 1 The final sample of development journal articles from the Emerging Sources Citation Index (ESCI) and the Social Sciences Citation Index (SSCI) from Web of Science; retrieved 23 July 2022.

	(Total)	ESCI	SSCI
Sample size (n)	419	81	338
% with funding	46%	31%	49%
% in English	98%	91%	100%
Publication date	2017-01-01 to 2022-06-30		
Publication type	Articles, review articles, first access, editorial materials		
Search string	ti = (resilien* AND policy) OR ab = (resilien* AND policy) AND wc = development studies		

however, these two citation indices attempt a more inclusive (albeit imperfect) sampling of global arenas in which to trace development scholarship on resilience.

The resulting database contained 419 resilience-oriented journal articles. Given the ambiguous and non-specific use of resilience in everyday language, articles required both 'resilience' and 'policy' in their title and/or abstract. This was in light of the volume of irrelevant results retrieved when solely relying on 'resilience'. The latter addition of 'policy' was selected in light of the heavy policy-orientation evidenced in prior meta-reviews. This proved effective in reducing the incidence of irrelevant search results (e.g., one-off colloquial uses of resilience in contexts unrelated to development risks), but adds a methodological caveat in biasing this study towards policy-related uses of resilience.

The ensuing results were further filtered to include only journal articles (including review articles and first access) and editorial materials (e.g., special issue introductions). Some key parameters are detailed in Table 1. The titles, abstracts, keywords, and full manuscripts were then used to identify the core research premises, problems, and methods—the basic ingredients of a Kuhnian paradigm.

As a final caveat, this sample excludes resilience knowledge production beyond SSCI and ESCI-listed development journals. This means that official documents, reports, conference papers, and other 'grey literature' are not covered here. This is an area that remains for future work. For the time being, academic journals offer a valuable space to start in piecing together a bigger picture on development's uses of resilience.

3 | RESULTS

To recall our opening question, how has the concept of resilience been used in development studies? At first glance, these 419 articles evidence an extensive use of resilience across development contexts (see Figure 2 in Park, 2023). Indeed, no less than 140 semantic varieties of resilience were found across these works (e.g., migrant resilience, forest resilience and cyber resilience; see Table 2). Following

our Kuhnian paradigms, the ensuing sections disaggregate their constituent premises, problems, and methods.

3.1 | Resilience premises

To begin, a conceptual diversity emerged when examining resilience definitions. At its most basic, resilience was defined by the ability to bounce back from shocks (Klassen & Murphy, 2020; Rizzo, 2017; Vergara-Solana et al., 2022). As reminded by Béné et al. (2018), its etymology stems from *resilire* ('to jump back') in Latin. This brings a gestalt shift in reframing risk. Instead of risk elimination, resilience emphasises systems-level adaptation as a more sustainable approach. Several origins in the genealogy of resilience are further traced to engineering, ecology and psychology (Bellini et al., 2017; Béné et al., 2018; Clare et al., 2017; Huang et al., 2018; Tan, 2021; Vitale et al., 2021).

In engineering, emphasis is placed on structural integrity against major shocks (Bellini et al., 2017; Vitale et al., 2021). Here, resilience prioritises *elasticity* over *hardness* when measuring a system's strength; for example, the tensile strength of bamboo over ceramic or brick. Béné et al. (2018, p. 118) offer one such example from naval engineering in 'the ability of materials to withstand severe conditions', alongside 'the capacity of a material to absorb energy when it is deformed elastically and then, upon unloading, to have this energy recovered'.

In ecology, resilience is framed as a 'system's ability to absorb the shock without changing its structure, identity and function' (Bellini et al., 2017, p. 141). If engineering responds to the risk of mechanical failure, then ecology adds the risk of extinction. As defined in a seminal work by Holling (1973, p. 17): "Resilience determines the persistence of relationships within a system and is a measure of the ability of these systems to absorb changes [...] and still persist. In this definition, resilience is the property of the system and persistence or probability of extinction is the result."

In psychology, resilience responds to personal trauma instead of extinction or mechanical failure (Rushton et al., 2022). Applied to both individuals and groups, Khosla (2017, p. 233) offers one definition as 'the capacity and a dynamic process of successfully adapting/coping, overcoming stress/risk/challenges and adversity while maintaining normal psychological as well as physical functioning'. While 'normal' functions change across social contexts, emphasis remains on the mental ability to persist amidst adversity (e.g., human and/or natural disasters and social discrimination).

To these, evolutionary resilience and social-ecological resilience added notable variations. Until now, definitions of resilience have focused on the ability to 'bounce back'. In evolutionary resilience, however, resilient subjects 'bounce forward' through structural transformation (Bellini et al., 2017). If prior definitions entail a minimal conservation of some past equilibrium, then evolutionary resilience entails maximal aim in moving above and beyond the status quo. Social-ecological resilience further expands the scope of resilience. Here, Ostrom (1996, 2009) and her social-ecological systems (SES) framework join Holling (1973) as seminal resilience works. Ostrom's SES approach is especially well-suited to sustainable development in recognising a

TABLE 2 A list of 140 varieties or flavours of resilience sampled in the development studies literature (see also Figure 2 in Park, 2023).

Academic resilience	Life cycle resilience	Resilience science
Adaptive resilience	Livelihood resilience	Resilience scorecard
Arable farming resilience	Local agrifood system resilience	Resilience strategies
Authoritarian resilience	Local resilience	Resilience theory
Civic resilience	Market resilience	Resilience thinking
Climate resilience	Migrant resilience	Resiliency choices
Climate resilient agriculture	Multi-dimensional resiliency	Resiliency frontier
Climate resilient development	National resilience	Resiliency options
Climate resilient infrastructure	Natural hazard resilience	Resilient adaptation
Coastal community resilience	Neighbourhood housing resilience	Resilient agricultural sector
Coastal resilience	Neighbourhood resilience	Resilient cities
Community resilience	Neoliberal resilience	Resilient development
Country resilience	Network resilience	Resilient ecosystem
COVID-19 resilience	Operational resilience	Resilient futures
Cyber resilience	Organisational resilience	Resilient global value chains
Dairy farmers' resilience	Pandemic resilience	Resilient indigenous territories
Disaster resilience	Pastoral resilience	Resilient industries
Disaster resilient village	Policy resilience	Resilient landscapes
Drought resilience	Population-level resilience	Resilient peripheral regions
Ecological resilience	Production resilience	Resilient planning
Economic resilience	Psychological resilience	Resilient rangelands
Ecosystem resilience	Public health resilience	Resilient refugees
Emotional resilience	Public servant resilience	Resilient regions
Energy resilience	Rare earth supply chain resilience	Resilient scenarios
Engineering resilience	Regional economic resilience	Resilient schools
Environmental resilience	Regional food resilience	Resilient supply chain design
Evolutionary resilience	Regional resilience	Retail resilience
Farmers' resilience	Resilience actors	Rural resilience
Faux resilience	Resilience approaches	Sectoral resilience
Financial resilience	Resilience assessment	Seismic resilience
Fishing community resilience	Resilience behaviour	Small-scale farmers' resilience
Flood resilience	Resilience capacity	SME resilience
Food systems resilience	Resilience challenges	Social resilience
Food-related disaster resilience	Resilience discourse	Social-ecological resilience
Forest resilience	Resilience factors	Specific resilience
Farming systems' resilience	Resilience finance	Student resilience
General resilience	Resilience framework	Sub-federal resilience
Global financial system resilience	Resilience goals	Supermarket resilience
Green team resilience	Resilience indicators	Supply chain resilience
Health system resilience	Resilience measurement	System resilience
Household resilience	Resilience mobility	Urban flood resilience
housing value resilience	Resilience outcomes	Urban food system resilience
Human resilience	Resilience paradigm	Urban resilience
Inclusive resilience	Resilience planning	Urban water resilience
Institutional resilience	Resilience policies	Value-based resilience
Labour market resilience	Resilience practitioners	Youth resilience
Legal resilience	Resilience programming	

greater intersectionality of individuals, institutions, and ecologies (e.g., Athayde & Silva-Lugo, 2018; Henderson, 2021; Szaboova et al., 2022).

These definitions illustrate some of the conceptual diversity surrounding resilience, but there remains a small elephant in the room. Namely, a substantial portion (nearly 20%) exhibited more ambiguous uses of resilience. Here, resilience is taken for granted with little explanation or elaboration. For example, Ryser et al. (2020) stress the importance of resilience for non-profit organisations and rural communities without specifying what said resilience actually means. Similarly, Taka and Northey (2020, p. 1740) specify 'organisational resilience' and the 'resilience, space and capacity of civil society' as their subject of study—but with no further explanation or analytical use.

Further articles evidence this ambiguous use of resilience—notably in EU contexts. For example, Clifton et al. (2018) cite EU resilience against financial shocks in a general, non-technical sense. Servent and Tacea (2021) also use 'resilient institutions' to title their special issue on EU decision-making, but as a broad descriptor more than as a specific concept. The same applies to de Bièvre (2018) on resilient EU trade policies and to Lewis and Sagnayeva (2020) on resilient political settlements in Kyrgyzstan. These ambiguous uses of resilience point to hazards in taking the concept for granted. Its various technical definitions (e.g., in engineering, ecology and psychology) remind that the concept of resilience is neither obvious nor homogenous.

In contrast to its diverse definitions, the normative orientation of resilience was more homogenous. Namely, resilience was frequently adopted as an obvious or implicit good. For example, Dudu and Çakmak (2018) cite the economic impact of climate change as reason for building resilience in Turkey—again without explanation of why or what resilience means. Similarly, Ahmed et al. (2018) cite the costs of antimicrobial resistance to call for greater economic resilience—again with no further explanation. The same applies to the call in Zereyesus et al. (2017) for resilience policies to solve food poverty in Ghana. In such cases, the normative orientation of resilience is taken for granted as desirable or good for development.

The one exception to this normative orientation arose when resilience tied to political institutions. Here, resilience was framed as normatively neutral (amoral) or even bad (immoral). For example, several studies attribute resilience to negative subjects like authoritarianism, neoliberalism, illicit drugs, and rentier states (Berry, 2020; Bril-Mascarenhas & Madariaga, 2019; Cavatorta & Tahchi, 2019; Gutierrez, 2020; Lewis & Sagnayeva, 2020). In rarer instances, studies highlight how resilience policies that meant to help caused harm instead (e.g., Volante & Klinger, 2022; Wares, 2022). However, these remain an exception to the norm of assuming resilience as an implicit good.

This normative stance in development studies stands in marked contrast to critiques in neighbouring fields (e.g., international relations, political ecology, security studies). These especially point to conservative biases extending from definitions of resilience as 'bouncing back' (vs. 'bouncing forward'). Examples include resilience in the contexts of climate security (e.g., Ferguson, 2019; Ferguson & Wollersheim, 2023) and broader geopolitics (e.g., Bourbeau, 2015,

2018). It is also worth noting a seeming disconnect between the development literature and these neighbouring works. For example, Wares (2022) makes no reference to prior critiques of resilience as neoliberalism (e.g., Joseph, 2013; Walker & Cooper, 2011). Similarly, Berry (2020) makes no connection to said critiques of resilience as neoliberalism when critiquing the resilience of neoliberalism.

In sum, development studies' use of resilience reveals diverse definitions, contrasted by a normative homogeneity on the desirability of resilience—regardless of its definition (or lack thereof). This further stands in contrast to a normative diversity on the (un)desirability of resilience noted in the broader literature on resilience. When speaking of resilience in development studies, not everyone is clear nor consistent on what exactly is being spoken about.

3.2 | Resilience problems

If development offers a kaleidoscopic (and somewhat blurry) array of resilience definitions, then do they at least converge on a common set of problems? Broadly speaking, a common thread can be identified in the problem of complexity. This complexity ties to development subjects and risks. To start with complex risks, resilience responds to unknown (or even unknowable) unknowns more than known unknowns. Research problems correspondingly shift from risk elimination to risk adaptation, given their unpredictability.

These risks further materialise in two forms: shocks and stressors. Shocks entail short-term, high magnitude events. Examples include financial crises, the COVID-19 pandemic, and natural disasters (e.g., Castañeda-Navarrete et al., 2021; Pfeifer et al., 2017; Sapountzaki & Chalkias, 2005; Walch, 2018). Conversely, stressors entail long-term, low magnitude events. Risks here include social discrimination, political oppression, economic hardship, and occupational stress (e.g., McNair et al., 2022; Pasha, 2020; Quérel et al., 2022; Wilcox & Lawson, 2018).

Shocks and stressors also appear together for the worst of both worlds: long-term, high magnitude impacts. Climate change is emblematic of this compound risk, with climate pressure (e.g., global warming and depleting watersheds) compounding extreme weather events (e.g., heat waves and forest fires) and human disasters (e.g., conflict and famine).

Complex subjects further compound these complex risks. This development scholarship is notably (but perhaps unsurprisingly) anthropocentric in its concern for social more than ecological subjects. The latter ecologies, where found, are invariably tied to the welfare of human subjects as part of a social-ecological system. Thus, wetlands tie to rural livelihoods in Bangladesh (Reid & Shafiqul Alam, 2017), just as forests tie to wildfire threats in the US or gender inequality in Nepal (Bhattarai, 2020; Steen-Adams et al., 2017).

A further distinction can be drawn between resilient individuals versus resilient institutions in development. The former centres on vulnerable groups, and overlaps closely with social and community development. Resilience problems trace here to a range of social dimensions, from age to ethnicity, gender, occupation, and race

(e.g., Costa et al., 2019; Davidson & Carlin, 2019; Hak et al., 2018; Hughes et al., 2022; Lawford et al., 2018).

In contrast, resilient institutions centre on social structures (e.g., markets and laws), and overlap more with political and economic development. Subjects of concern here include resilient industrial sectors, financial markets, supply chains, policy regimes, and governmental organisations (e.g., Cardoso et al., 2022; Ji et al., 2020; Liu et al., 2018; Madariaga, 2017; Nan & Park, 2022; Philippsen et al., 2021; Wong & van der Heijden, 2022). Works also point to a securitisation of resilience in development, as seen in critical national infrastructure, cyber security, and broader national security problems (e.g., Keller et al., 2018; Noel et al., 2021; Oyewunmi, 2021; Zhong et al., 2022).

Finally, problems that more explicitly centre on social-ecological subjects arise in rural and urban development. Spanning a diverse human geography, examples include coastal fisheries, semi-arid agriculture, and small island developing states (SIDS) (e.g., Delfiyan et al., 2021; Robinson, 2019; Szaboova et al., 2022). Again tied to human welfare, they nonetheless canvass a diversity of ecologies from cities to rainforests, wetlands, plateaus, mountains, grasslands and more (e.g., Baumber et al., 2020; Cao et al., 2018; Fastenrath et al., 2019; Huntsinger & Li, 2018; Mercy, 2020).

Combined, these subjects and risks produce a vast array of development problems addressed by resilience. Echoing its many definitions, these problems reflect development's multidisciplinary terrain. In trespassing across disciplinary borders, these problems frequently challenge the very relevance of present categorical divides (e.g., natural vs. human disasters, economy vs. environment, and humanitarianism vs. development). Thus, resilience enables interdisciplinary responses to interdisciplinary problems. Examples range from unsustainable forestry tied to gender inequality, violent conflict tied to food insecurity, and urban flood risks tied to racial injustice (Bhattarai, 2020; Brück & d'Errico, 2019; Hughes et al., 2022).

This widespread use of resilience to address interdisciplinary problems evidences a common concern with complexity. Beyond this underlying problem or meta-problem, however, little evidence was found of a shared set of problems across these works. Even climate change does not offer a unifying strand, given studies focusing only on social resilience. These works rather suggest a widespread application of resilience to pre-existing development problems more than a coalescing of a dedicated set of resilience problems, *per se*.

This raises a curious possibility wherein the interdisciplinarity found under resilience ironically remains divided along disciplinary lines. When considered alongside resilience's diverse definitions, these problems and premises suggest that resilience is subsumed within pre-existing development paradigms instead of constituting a so-called 'resilience paradigm' of its own.

3.3 | Resilience methods

If little evidence is found of a dedicated set of resilience premises and problems, then what of the methods employed by these works? As

possibly suggested by a shared concern with complexity, is there evidence of a shared methodology? It is here that development's plural disciplinary paradigms become especially clear. To elaborate, resilience is used methodologically in two ways: (i) as an empirical subject and (ii) as a theoretical approach.

The use of resilience as an empirical subject can be noted in studies of resilience policy and resilience scholarship, itself. The former evidences the extensive use of resilience in development policy (e.g., Dwyer, 2022; Eraydin & Özatağan, 2021; Kakderi et al., 2021; Roberts et al., 2017). A short sample of this long list includes policies from the European Union, the Food and Agriculture Organisation, the Intergovernmental Panel on Climate Change, the Organisation for Economic Co-operation and Development, the UK Department for International Development, the United Nations, the World Bank, and the World Health Organisation (e.g., Arslan et al., 2018; Bottazzi et al., 2019; Rushton et al., 2022; Sundararaman et al., 2021; Volante & Klinger, 2022; Wang et al., 2017).

The latter empirical focus on resilience scholarship, itself, adds evidence of the extensive use of resilience in development studies. As noted by Huang et al. (2018, p. 47), there has been 'an explosion in the popularity of resilience within both academic and policy discourses'. Here, a number of prior meta-reviews highlight the multidisciplinary and multisectoral scope of resilience research. Bodies of work surveyed here include resilience in climate change, agriculture, community participation, economic development, finance, and peace-building (e.g., Barrett, 2017; Castells-Quintana et al., 2018; Ferreira, 2020; Fook, 2017; Jawo et al., 2022; Johnson et al., 2021; Manzini & M'Rithaa, 2016). COVID-19 also emerged as a common thread in meta-reviews on resilient value chains and public health systems (e.g., Anbumozhi & Kalirajan, 2021; Caponnetto et al., 2021). These studies on resilience research, however, were notably outweighed by a prevailing empirical focus on resilience policies.

The second use of resilience as part of a theoretical or analytical method also brings its multidisciplinary constituents to the fore. Here, resilience was integrated into a host of pre-existing methods across the social sciences and the humanities. These span both quantitative and qualitative methods for measuring or otherwise evaluating resilience. Quantitative approaches include a heavy emphasis on modelling to measure the resilience of social and social-ecological subjects. Stemming from economics, urban studies, operations research, and management science, resilience is proxied through a variety of spatial and spatial-temporal regression models. These frequently focus on modelling resilience at the national scale (e.g., Du et al., 2020; Kim & Marcouiller, 2020; Pascariu et al., 2021; Wang et al., 2021). In rarer occasions, models extended to transnational contexts in examples of EU resilience and supply chain resilience (e.g., Annoni et al., 2019; Liu et al., 2018).

Qualitative methods for measuring resilience also emerged from anthropology, geography, history, and politics. To recall the subdivision of social subjects into the resilience of individuals versus institutions, individuals subjects involved ethnographies and life histories to capture subjective perceptions and local definitions of resilience

(e.g., Athayde & Silva-Lugo, 2018; Drennan, 2018; Maitrot et al., 2021). Historical methods also arose in various forms to study institutional subjects. These include methods allied to political ecology, historical institutionalism, heritage studies, social-ecological systems analysis, and discourse analysis (e.g., Beckwith, 2022; Gupta & Gupta, 2022; Mikulewicz & Taylor, 2020; Steen-Adams et al., 2017; Vanhercke & Verdun, 2022).

Combined, these quantitative and qualitative approaches to measuring resilience highlight the diversity of resilience indicators, themselves. For example, resilience could be proxied or measured through the temporal speed of a system's recovery, the breaking point of simulated financial markets, scorecards to subjectively evaluate local and national conditions, or coping mechanisms adopted by vulnerable groups to adapt to systemic risks (e.g., Leal & Napoletano, 2019; Pfeiffer et al., 2017; Tan, 2021).

On one hand, these measurements reflect a shared recognition of complex development subjects and risks. On the other, this shared recognition belies a marked diversity, if not divergence, in the ensuing methods to measure and understand resilience. Adding to the diversity of resilience premises and problems, these methods provide little evidence of a binding element or collective orientation that would indicate a distinct resilience paradigm.

4 | DISCUSSION

4.1 | The (non-)existence of a resilience paradigm

Having examined the premises, problems, and methods across these sampled works, has the rise of resilience in development studies brought a new paradigm? These 419 journal articles suggest that there is no dedicated resilience paradigm in development studies—at least not as of yet.

A case might be made instead for resilience as being in a pre-paradigm state. This is described by Kuhn (1996, pp. 47–48) as being 'marked by frequent and deep debates over legitimate methods, problems, and standards of solution, though these serve rather to define schools than to produce agreement'. However, there is no inherent reason for why resilience *should* constitute a paradigm. As warned prior, paradigmatic status should not be conflated as implying some scientific superiority. Indeed, it is worth remembering that Kuhn's paradigms fundamentally warn against an unquestioning faith in science.

Rather, what this lack of a resilience paradigm means is that development scholars use the concept in substantially different ways (Table 3). The observed premises, problems, and methods offer little in the way of a coherent paradigm, logic scaffold, or Lakatosian programme (Kvangraven, 2021; Park, 2020). Instead, resilience may be better framed as a *catalyst* in development research and policy. In its role as a catalyst, it has promoted recognition of complexity across a range of systemic subjects and risks (e.g., from climate change to financial crises, social discrimination and geopolitical risks).

TABLE 3 A Kuhnian paradigm-based deconstruction on the uses of resilience in development studies.

Shared premises	Language: Resilience definitions	'Bounce back', 'bounce forward', or undefined/ambiguous
	Values: Normative orientations	Resilience as good (or, in rare cases, as bad)
Shared problems	Managing complex risks	Shocks, stressors, or both (e.g., climate change)
	Managing complex subjects	Social or social-ecological systems
Shared methods	Uses as a theoretical approach	Resilience as part of quantitative, qualitative, or mixed methods
	Uses as an empirical subject	Resilience policies or resilience research as the empirical data

While one might foresee potential conflicts between these uses, that would require contact and mutual awareness in the first place. These findings rather found more evidence of fragmentation in the literature. For example, Dafermos et al. (2021, p. 248) adopts a vague definition of climate resilience, explaining that 'Despite widespread use of the term, the meaning of 'resilience' is poorly defined'. Though partly true, this sample produced many works that respond to this very problem—yet to no avail. Indeed, such efforts did not seem to translate across the sample to mitigate the more vague or ambiguous uses of resilience found.

Similarly, disconnects were observed between this development literature and neighbouring fields in international relations, political ecology, and security studies. This includes parallel arguments noted in relation to neoliberalism and resilience in Wares (2022) or Volante and Klinger (2022). In this regard, this study's present attempt at a more holistic view of resilience in development studies adds to potential defences against more cavalier or less constructive uses of the term for sustainable development.

The significance of resilience's pre-paradigmatic status also extends beyond the ivory tower. In particular, the current role of resilience as a catalyst for responding to complexity raises distinct challenges and opportunities for development research and policy. Outlined in Table 4, these entail superimposed possibilities for resilience as both a rallying call and a siren song in sustainable development.

4.2 | Resilience as a rallying call

The widespread use of resilience to respond to complex risks raises prospects for a new *resilience consensus* in development research and policy. This consensus lacks the analytical depth or consistency of a paradigm. In a twist, however, this may enhance its role as a catalyst or rallying call for global action on sustainable development. Offering

TABLE 4 Implications for drawn from the present uses of resilience in development studies.

Opportunities	Resilience as a rallying call: a new consensus for global action	A platform for international cooperation
		A platform for interdisciplinary innovation
Challenges	Resilience as a siren song: a new mechanism for political control	A problem of language (ontological)
		A problem of measurement (epistemological)
		A problem of trade-offs (moral/ethical)
		A problem of control (political)

an open and inclusive space, this growing resilience consensus bears opportunities for (i) international cooperation in development policy and (ii) interdisciplinary innovation in development research.

Resilience may ironically bear opportunities *thanks to* its ambiguous, non-uniform use. This is set amidst rising geopolitical tensions, which endanger prospects for sustainable development and climate action (Park, 2022). In such contexts, even a shallow normative consensus on the value or need for resilience adds a vital starting point for global action. As noted by development economist and policy-maker Paul Streeten (Jolly & Streeten, 2001, p. 127):

Perhaps lack of clarity and sharpness is the price you have to pay for getting agreement on action. Practical [people] reach agreement by blurring distinctions, academics by sharpening them. If you spell out your meaning too clearly, there will be some interests that will object.

However ambiguous or inconsistent its meaning(s) may be, the widespread use of resilience opens vital space for development cooperation and climate action. If ambiguity is the proverbial lifeblood of diplomacy, then one might argue that resilience has diplomacy running in its veins. Indeed, resilience's non-status as a paradigm in development studies frees it from the exclusionary norms dictating Kuhn's scientific paradigms. This aligns well with arguments of resilience as a 'floating signifier' that can simultaneously house not only hegemonic, but also counter-hegemonic aims (e.g., Damgaard, 2019; Rothe, 2016). A silver lining hence emerges in the inclusive participation enabled by a less-disciplined use of resilience, *à la* Feyerabend's (1993) call for epistemic anarchy.

This (pre-)paradigmatic view of the possibilities opened by resilience for development cooperation add to complementary views derived through discourse analysis (see Bourbeau, 2018; Ferguson et al., 2020; Ferguson & Wollersheim, 2023). Together, these point to more pluralistic views and less deterministic possibilities for resilience

research and policy. However, this also implies neither an automatic nor a straightforward process towards desirable outcomes. Indeed, the flip side of a less regimented or regulated use is a cacophony and/or hegemony spread through resilience arenas (as will soon be discussed). Yet, every change brings an opportunity, and the longer trials and travails of development suggest the need to seize such opportunities—whether premised on a polyvalence (Ziai, 2016) or a pragmatism (Park, 2020) regarding new buzzwords.

Development research also stands to gain from resilience as a platform for interdisciplinary innovation. In its role as a catalyst, resilience offers a means to bridge disciplinary perspectives on sustainable development. Much in the way that the concept of institutions has been shared across social studies (e.g., economics, history, politics, sociology), resilience opens a path for disciplinary cross-pollination. This especially resonates with parallel calls on the need for transdisciplinary approaches to sustainable development (Biswas & Miller, 2022; Cockburn, 2022; Kruijff et al., 2022). Once again, it is thanks to its lack of paradigmatic status that this resilience consensus can span multiple disciplines. This may not be just a bonus, but a necessity to meet the complexities of sustainable development.

4.3 | Resilience as a siren song

Beyond its opportunities, this sample's ambiguous and fragmented use of resilience undeniably bears challenges. Inverting its rallying call as a potential siren song, this can be traced across problems of (i) language, (ii) measurement, (iii) trade-offs, and (iv) control.

First is an ontological problem of language. In large part, the prior opportunities hinge on effective communication of what we mean by resilience in development studies. However, the sampled uses point to multiple, at-times fuzzy definitions. Moreover, its fragmentation suggests a lack of awareness across said differences. The mention of language also raises another elephant in the room, in the extent to which 'resilience' meaningfully translates beyond English-language academic and policy discourses—a question that remains for future work.

A general lack of awareness on the many ways in which we speak about resilience can impair collective action. In particular, it raises the risks of miscommunication and semantic conflicts, which deter effective knowledge production and development cooperation. Resilience may thus pose what linguists refer to as a false friend. A classic example is the word 'gift' in English versus 'Gift' ('poison') in German. The same semantic vessel, ontological category, or speech acts can contain very different substantive meanings.

This problem of language is thus a fundamental problem of communication. It does not necessarily entail a monolithic definition of resilience—however good (e.g., sustainable) or bad (e.g., neoliberal) it may be. Rather, it points to a fundamental need for critical awareness of resilience discourses and dialects. A lack of said awareness raises barriers for effective communication and collective action. Uncritical adoption can further invite hegemony over resilience meanings, which

shape the terms for ensuing policy debates. Far from abstruse or abstract, the ontological contents of resilience cannot be taken for granted, and warrant close scrutiny.

Second is an epistemological problem of measurement. Once resilience has been defined, how does one measure it? When situated in global contexts for sustainable development, this problem of measurement is far from straightforward. As observed here, resilience bears diverse methods for measuring resilience (e.g., models, scorecards and life histories)—raising questions of which resilience measures apply when and where. When applied across global contexts, this renders practical dilemmas. For resilience to forge a practical consensus, it will also need common measures from which to derive action. Referred to by Kuhn as a problem of incommensurability, questions remain on the translatability or transferability of resilience definitions and measures.

Third is a moral or ethical dilemma of trade-offs. Perfect compatibility in both language and measurement can still render practical dilemmas. As reminded by Berlin, no one guaranteed that justice would not conflict with mercy or that love for one's own would not conflict with love for one's neighbours (Berlin & Lukes, 1998). Normative consensus on the 'goodness' (or 'badness') of resilience does not guarantee against moral dilemmas. These are perhaps most obvious across spatial-temporal scales. For example, one may face conflicts between global, national, and local resilience aims or in short-term suffering for long-term gains. Added to tensions between economic growth and environmental conservation, resilience invokes contested choices or rank-orderings between different actors and goods.

Fourth is a political problem of control. If development studies evidence multiple conceptions of resilience, then who gets to define resilience for whom? Beyond cooperation, resilience also bears potential for coercion. These plural definitions and measures highlight resilience's potential for tragedy. These do not necessarily require an evil to produce harmful ends (e.g., neoliberalism). This potential for tragedy also stems from colliding goods (see the above moral dilemmas). As evidenced here, resilience concepts and measures cannot be assumed to be constructive, compatible, or even communicable across global contexts.

In the absence of critical awareness, the present uses of resilience in development studies thus simultaneously pose a siren song for sustainable development. At best, this entails energy wasted on unconstructive policy and knowledge production (e.g., semantic conflicts, old wine in new bottles). At worst, it invites risks of political capture, where might defines what is right. As cautioned by Wares (2022), resilience may be used to shame and blame less powerful actors into punitive action (see also Walker & Cooper, 2011; Wandji, 2019).

Consequently, these problems of language, measurement, trade-offs, and control reveal risks underlying resilience's rallying call. Tied to challenges for collective action on sustainable development, the rising use of resilience warrants both optimism and caution. Neither side is palatable (nor particularly productive) on its own. Recognising its dual face as a rallying call and a siren song may ward against a resilience that yields another development panacea with rapid growth but

no progress; yet another form of Wittgenstein's proverbial 'engine running idle'.

5 | CONCLUSION

This article investigated how the concept of resilience was used in development studies, sampling 419 journal articles from 2017 to 2022. Framed in terms of Kuhnian paradigms to analyse resilience knowledge production, it found little evidence of a distinct resilience paradigm in development studies. Instead, resilience was used in at-times inconsistent and ambiguous ways across pre-existing development paradigms. An indication of this non-uniform use was seen in the many definitions of resilience premising these studies. These were compounded by resilience problems spanning a wide array of subjects and risks. Crossing multiple disciplines, these studies reflect a corresponding diversity of methods for operationalising resilience in development studies.

These premises, problems, and methods hence found resilience used more as an extension of old paradigms than the start of a new one. Correspondingly, this study found resilience acting more as a catalyst towards a new consensus in development research and policy. Lacking the analytical clarity or consistency of a new paradigm, this resilience consensus still bears new opportunities and challenges. In the former, resilience acts as a potential rallying call. Its widespread adoption and ambiguity opens vital space for development cooperation and climate action—particularly in a time of rising temperatures and geopolitical tempers.

However, resilience's rallying call also bears a potential siren song. Here, problems of language, measurement, trade-offs, and control point to ontological, epistemological, moral, and political challenges. A lack of awareness of the many ways in which we speak of resilience raises barriers to sustaining collective action. Bearing implications for effective research and policy, resilience knowledge production cannot be assumed to be constructive, compatible, or even communicable across development contexts. The politics surrounding sustainable development and climate action thus tie to deeper contestations in resilience knowledge production, itself. Leading to potentially tragic outcomes, they remind of the challenge of realising collective action across plural perceived realities.

Consequently, this study closes with a call for critical awareness on the manifold uses of resilience in development. This does not propose or imply some monolithic form of resilience for sustainable development. Rather, it entails plural pragmatic uses that recognise resilience's potential for both cooperation and tragedy—without committing to either (e.g., blind optimism vs. fatalistic pessimism). This may require expanded monitoring of resilience knowledge and policy production to foster opportunities for effective cooperation.

In a final twist, however, the Kuhnian paradigms employed here may have limited value in the immediate future. This is due to their present relevance in describing not what resilience *is*, but what resilience *is not*. Alternative methods in intellectual history and policy analysis may offer more fruitful directions for moving forward. The marked presence of resilience in both academic and policy discourses

also raises possible academic–policy linkages (or a lack thereof) to be discovered. An underlying premise, however, will remain.

Whether at the level of local or global action effective communication remains key. When talking of resilience, it is helpful to know precisely what we are talking about. A lack of critical understanding of resilience may otherwise spell the loss of a valuable language for sustainable development and potential abuse from ‘those who for the time being enjoy the monopoly of definition’ (Hettne, 1990, p. 281).

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

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