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Creating fairer futures for sustainability transitions

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Abstract

Futures thinking is an expanding interdisciplinary field which is seen as a key element of transitioning towards a more sustainable planet and society. Developing fairer futuring is increasingly urgent in the context of the radical reconfiguration of current systems needed to meet complex global sustainability challenges. However, explicit consideration of uneven power and participation and the nature-society relations that feature in contemporary futuring processes has been given little explicit attention to date. This deficit is addressed in this paper through a critical review of dominant futuring approaches and outlining insights from critical perspectives which (a) identify limitations of current futuring approaches and (b) provide important perspectives to help shape fairer futuring in geographical research.

KEYWORDS
diverse economies, feminist geography, feminist political ecology, future studies, futuring, sustainability

1 | INTRODUCTION

Global challenges, from pandemics to conflicts and climate change to biodiversity loss, have created greater pressures on society to envisage more sustainable futures as a pre-cursor to enacting them. This has seen an expansion of future-orientated activities in industry, policy and academia (see, e.g., Davies, 2014a; Davies & Doyle, 2015; Demneh & Darani, 2020; Etherington, 2009; Gupta et al., 2020; IKEA, 2019; Vervoort & Gupta, 2018). Within geography, creating and exploring alternative futures was historically dominated by quantitative and physical geographers, contributing to global scenarios (Barnes, 2008; Camacho, 2013; Manley et al., 2017; Sitch et al., 2008) and foresight exercises (OECD, 2016) for government and policy makers. Meanwhile, human geographers have worked to explore

how planning processes shape the nature and extent of participation of diverse publics within them, which then affects the physical and material form and experience of places (e.g., Davies, 2001). Nonetheless, to a large extent, more critical questions about the future and who should be involved in shaping visions for it, have remained marginal and marginalised (Raven & Stripple, 2020).

As Oomen et al. (2021) note, the future is not 'already pre-existing' in a strict sense, articulations of it are certainly a point of orientation for action in the present. Constructions of the future give direction and structure to possible development pathways for societies and policies (Bell & Mau, 1971; Polak, 1973 in Oomen et al., 2021). Despite the influential role of visioning for influencing decisions in the present about space, place and nature-society relations, the question of who is involved in creating future visions and the difference that makes to those visions has been given little critical attention to date. However, this needs addressing to avoid replicating or reinforcing inequalities. Engaging with issues of access to, and participation in, futuring is vital given calls for just transitions and the United Nations 2030 Agenda for Sustainable Development (White, 2019, 2020). Certainly, achieving a just transition towards sustainable development will not be possible without interrogating issues of access and power within futuring practices, and ensuring fairer futuring approaches. This paper contributes directly to such efforts.

In this paper we provide a critical review of current futuring approaches with geographers in mind. Following a review of literature on futuring approaches particularly relevant to geography, this paper outlines how more critical perspectives could address shortcomings visible in current practices and then outlines a research agenda for fairer futuring.

2 | FUTURING: STATE OF THE ART

The field of futures research is significantly fragmented, leading to a lack of comprehensive knowledge about futuring practices (Fergnani, 2019). This makes a critical review of the literature all the more necessary, but also challenging. Studying, and seeking to shape, the future has taken many forms and has been enacted by different stakeholders—from nation states and industry to academics—with quite different goals. As a result, futuring includes a range of activities and methodologies, from exploring the role of visions in innovation and technology dynamics as a method for problem solving around sustainability challenges, and the use of narratives and storytelling about imagined futures, to using foresight methods to explore possibilities for transformative change (Dignum et al., 2018; Hebinck et al., 2018; Tussyadiah & Miller, 2020; Wiek & Iwaniec, 2014). In order to bound our analysis we adopt the definition of futuring identified by Millett, 2006 detailed in Tussyadiah and Miller (2020, p. 676) as 'systematically thinking about the future' in order 'to identify emerging opportunities and threats,' and 'to anticipate actions that will promote desirable outcomes'.

Given the scope of the approaches and disciplines involved, this review is not exhaustive of all future-facing activity, rather it outlines key issues, themes, challenges and areas of interest to the geographical discipline in relation to just transitions and sustainability, including society-nature interactions and multi-scalar processes central to the achievement of sustainable transitions. It provides a state-of-the-art analysis to enable greater critical engagement by the geographical discipline at the nexus of futuring and sustainability transitions. Drawing on the framing developed by Fergnani (2019), which provides a systematic mapping of scholarly research in the field from 1968 to 2018 (Fergnani, 2019), three major clusters of futuring are reviewed: Corporate foresight, environmental futures, and humanity at the limen.

2.1 | Corporate foresight

Corporate foresight exercises seek to produce actionable insights to benefit corporate actors (Fergnani, 2019) which become manifest in corporate strategies and commercial products. These exercises are relevant to geographical

research concerned with sustainability transitions as they create real world impacts, for example, in terms of stimulating production and consumption processes which themselves affect resource use. The development of the automobile—and Henry Ford's 'car for the masses', for instance, altered the 'planning of cities, suburbs, urban design, rural life, retail shopping, tourism, leisure and more' (Fry, 2009, p. 39 in Clune & Pollastri, 2020, p. 92), deeply affecting a range of activities from mobility patterns to how and what food was consumed in cities. More recently, the need to reconfigure food systems has seen significant investments from venture capitalists into the development of alternative proteins (REINVENT, 2020, p. 63), indoor vertical private farms, and other corporate- and technology-led food innovations. These innovations tend to address some aspects of our unsustainable food system (e.g., reducing emissions from animal farming and from food transport), yet they are rarely subjected to full sustainability assessments and tend to focus on market opportunities to exploit rather than addressing issues of social or ecological justice.

Being focused on commercial product development, as with the Philips design probes (Etherington, 2009), or on how to navigate uncertainty and develop strategic thinking, such as the scenarios development conducted by Shell (Bentham, 2014), corporate foresight tends to work within the constraints of the current commercial system. Given the dependency of incumbent actors' interests in maintaining their market advantage, this often means such futuring seeks to stabilise the current system or, in the context of challenges such as decarbonisation, attempts to recalibrate activities within changing environments so as not to be negatively affected. Corporate foresight, in this sense, is predominantly focused on technological solutions to current issues that work within the prevailing system, while assuming that radical social system change (e.g. around lifestyle and consumption practices) is not (or is less) feasible than unproven technologies. White (2019) suggests that this technocratic approach has become central to what he calls the current de-futuring project, which he argues is being used to propagate particular systems of production, consumption and disposal, and attendant lifestyles, thereby closing down the range of future possibilities. As a result, many corporate-driven futuring exercises allow little space to test or challenge existing power relations (Leszczynski, 2016) and leave dominant growth narratives unproblematised and unquestioned (Curry & Hodgson, 2008). This is seen, for instance, in corporate-led visions of smart cities (Lee et al., 2020), which are dominated by technology and market-based conceptions of citizenship. Such visions are not static, but are manifest in cities' approaches to sustainability transitions which prioritise and mobilise technology and corporate solutions (see Hagbert et al., 2020). In sum, corporate futuring perspectives can be characterised as techno-optimistic, elevating dominant narratives and interests. Due to commercial competition, participants in futuring exercises are often limited to a suite of elite corporate professionals, with little space for wider stakeholder or citizen engagement in their development, leaving matters of procedural, distributive and restorative justice unattended.

2.2 | Environmental futures

Escalating resource use and its role in creating climate and biodiversity crises has stimulated a range of environmental futuring exercises (Fergnani, 2019, p. 113). Since the 1970s, such expositions of environmental futures have become dominated by increasingly sophisticated modelling of environmental change with climate modelling emerging as the dominant form of knowledge about climate futures (Davies, 2014b; Raven & Stripple, 2020). However, scholars have argued that such framing has served to elevate technical fixes under the auspices of neoliberal governance (Castree, 2008; Demeritt, 2001). In the face of increasingly complex and dynamic environmental challenges, anticipatory foresight approaches are being employed in order to explore alternative environmental futures. Strategic foresight, for example, is a method and practice used to create functional and operational views of possible futures, with a view to influencing today's decisions (Tõnurist & Hanson, 2020, p. 17). Such approaches are used widely in policy, particularly in Europe (European Commission, 2020).

In terms of climate mitigation, environmental futuring has addressed the role of solar engineering, Carbon Capture and Storage, and green hydrogen or natural gas as a 'bridge' to decarbonised futures. These have proved influential in international negotiations (e.g. those at the Conferences of Parties relating to the United Nations

Framework Convention on Climate Change (UNFCCC) and via the work of the Intergovernmental Panel on Climate Change (IPCC)), but have failed to engage wider publics in imagining what these interventions mean in practice. They have also, as yet, failed to provoke appropriate action from policy makers and the private sector to meet the global challenges faced.

The inherently normative, highly political and essentially fundamental questions regarding what kind of transformed socioecological system people might wish to inhabit in the future, and importantly, how such transformations should occur, remain marginal in the inputs to global environmental change negotiations to date. Scenario development, employed extensively in sustainable development and IPCC processes, is criticised for a lack of transparency, and an implicit normative bias towards maintaining current global economic structures. Scenarios analysing how a no-growth, steady state or even degrowth economy would work out for environments, social structures, economic prospects and community flourishing, for example, are largely absent (Spangenberg, 2019).

As with corporate foresight, the bulk of environmental futures work remains an elite and highly technical activity focused primarily on improving governance of the environment. Particular logics and assumptions underpin these activities, which are grounded within prevailing orthodoxies, ignoring the emergence and expansion of counter-movements (Kallis et al., 2020) because they do not fit with pre-set, albeit often opaque, parameters for action. In the work of Li (2011, p. 57) such governing practices are seen as 'rendering technical' the field under consideration, setting boundaries and limits to action and focussing on certain characteristics (Rose, 1999, p. 33, cited in Li, 2011, p. 57). In the case of environmental futuring, this technical rendering serves to depoliticise the environment and obscure the uneven power relations underpinning many environmental challenges. Beyond this, the technical rendering of environmental problems, as in areas of community development (Ferguson, 1994), also elevates technical interventions as solutions.

2.3 | Humanity at the limen

The liminal period of global systematic transition that humanity is inhabiting, including challenging issues such as population growth, migration, and environmental collapse has stimulated a suite of futuring activities (Fergnani, 2019). The work within this cluster gives space to reflect on how we might transition towards and live within more sustainable futures. In contrast to corporate foresight exercises, these activities allow for a deeper and wider exploration of worldviews, cultures, and current unsustainable practices, as a means to create space for articulating and discussing alternative futures.

An example of such futuring includes 'The Museum of Carbon Ruins', an exhibition in Lund, Sweden, fictionally set in 2053, where the transition to the post-fossil sociotechnical regime has already happened (Raven & Stripple, 2020, p. 10). Guided by a curator, encountering around 60 objects including a frequent-flyer card and vintage fossil-plastic Lego, visitors are transported to a future where the transition to a post-fossil sociotechnical regime has already happened and future low-carbon lifestyles are normalised, while contemporary practices of consumption are framed as strange and unfamiliar (Ibid). Similarly, the Rough Planet Guide to Notterdam 2045, is conceived as a travel guide to the fictional city of Notterdam, through which the reader is brought into the future through narratives relating to speculative artefacts from a socially transformed future (REINVENT, 2020). In the area of food for instance, the guide contains a section on sustainable eating out tips, outlining staff writers favourite food spots (REINVENT, 2020, p. 49). In 'Asiatown', these include positive appraisals of 'mystery meat' made of low-carbon proteins such as jellyfish, earthworms and crickets, with lab-grown meat options available at the Docklands and lab-grown salmon steak served at waterside restaurants (REINVENT, 2020). The guide reveals possible practices that could exist in a city of the future, as well as indicating the possible shape food transitions could take, including a predominantly vegetarian diet, organic meat production and trends towards agro-ecological methods (REINVENT, 2020, pp. 14–15), as well as technological interventions such as the lab-grown meat options. The use of

familiar formats, such as travel guides, presents a novel means to engage wider stakeholders, and particularly publics, with future visions.

Focussing on sustainable energy transitions, Hajer and Pelzer (2018) adopt a dramaturgical perspective of politics as performance, to develop '2050-An Energetic Odyssey'. This futuring exercise took place in the context of stalemate within talks about developing a North Sea energy collaboration and centred around an elaborate multimedia installation, introducing large scale exploitation of the North Sea for harvesting offshore wind energy (Hajer & Pelzer, 2018). The installation took the form of an animated narrative, designed as a large floor projection and developed with designers and scientists with expert input from builders, offshore specialists, ministries, energy firms, a transmission system operator, port authorities, and environmental organisations (Sijmons & Hajer, 2019).

The 2050—An Energetic Odyssey is portrayed as a desirable future in which 'the centre piece are 25,000 giant 10 MW off shore windmills, catering for 90% of the electricity demand of the countries around the North Sea' (Hajer & Pelzer, 2018, p. 225). Similarly, in the Notterdam case the idea of lab grown meat is presented as part of the writers' eating out recommendations, framing it as a desirable practice. However, lab grown meat maintains and expands current industrial logics around food production. Both the lab-grown meat of Notterdam and the large-scale offshore wind turbines imagined within the Energetic Odyssey, are based on commercial developments in the present that are likely to remain privately, rather than publicly owned in the future. Indeed, in the case of the 2050 Energetic Odyssey the authors note that the environmental movement expressed concern that offshore wind was focused on dominant incumbent interests (Hajer & Pelzer, 2018, p. 226). On the whole, such dimensions of power, ownership and participation in both creating and shaping the nature of imagined futures remain under examined. Indeed, the authors of the Odyssey exercise themselves conclude that "a plurality of futures and stakeholders remains necessary in the Post-Paris era" (Hajer & Pelzer, 2018, p. 230).

Not only are diverse publics missing from the formation of future visions of humanity at the limen, within the majority of futuring exercises in this cluster (as with the others), such visioning tends to focus on wealthy Western industrialised contexts with few similar exercises conducted within the majority world (although see, Herbeck & Flitner, 2019). Even where global south contexts are considered there remain concerns around the practices of futuring which retain colonial overtones and replicate many of the limitations of futuring in the Global North (Kothari & Wilkinson, 2010; Wade, 2019).

3 | LIMITATIONS OF FUTURING APPROACHES

A key element of concern with enacting just transitions towards more sustainable futures is that the visions which transitions pathways set out to achieve are themselves formulated in a just fashion (e.g. are procedurally just), that the distributional implications of visions are considered and that they recognise the need for restorative justice that seeks to rectify past injustices (Biffi & Pali, 2019). What the review conducted above reveals is that whilst attention to these three dimensions of justice, primarily through participatory futuring, namely including and tending to diverse perspectives and publics, is being operationalised by geographers and others (Davies, 2014a; Davies & Doyle, 2015; Hebinck et al., 2018), it is not the dominant approach. Indeed, participatory futuring is not mentioned within the clusters that Fergnani (2019) develops and discusses.

Despite some evidence of diversification, futuring practices in toto remain dominated by elite-driven technical processes which tend to operate within (rather than critique) the parameters of contemporary capitalism and have a faith in technological fixes for problems in the present. With the exception of some recent developments within the humanity at the limen category described above, futures produced in this way are often constrained and abstract in nature, providing few opportunities for imagining what it would be like to inhabit them. Even with these novel developments diverse publics are rarely central to the formation of future visions. As a result, it is useful to consider how insights from research, in particular that which draws on feminist political ecology (FPE), critical agrarian and development studies, and diverse economies approaches, might help to address these limitations and work towards more

inclusive, and ultimately fairer futuring activities, particularly in addressing: politics and affect; power and practice; and diverse values and economies. These perspectives provide important analytical leverage for asking meaningful questions about how futures are constructed, who is involved in constructing them and the ends to which they are put. Such questions are particularly important given the increasing calls for just transitions towards more sustainable futures.

3.1 | Politics and affect

Political ecology perspectives are particularly helpful when considering limitations in futuring around technical preoccupations that dominate much futuring practice. Indeed, the predominance of seemingly apolitical techno-fixes in futuring, outlined previously, obscure the highly political nature of transitions which are rooted in power dynamics (Barry, 2014, p. 170; Healy & Barry, 2017), involving processes of inclusion and exclusion. Political ecology, meanwhile, explicitly focuses on power relations in the coproduction of nature and society (Sultana, 2021). As such, political ecology is well placed to identify and critique how matters of participation and politics are manifest within futuring. Indeed, research using a political ecology framing has already prompted a sober questioning of the suitability and desirability of highly technical and commercial visions of food futures (Agyeman & McEntee, 2014). Moragues-Faus and Marsden (2017), for instance, outline how political ecology allows for more critical perspectives on food, particularly in understanding place-based socio-natures and the need to address the politics of scale and inequality and to co-produce knowledge and change.

Food futures in particular are often seen as highly technical, with Artificial Intelligence and the Internet of Things envisioned as having the potential to make food production and consumption more efficient, with precision nutrition and alternative protein diets farmed not in a field but in a lab (Davies, 2014a). However, many highly political questions remain such as: Who will own the means of production? What kinds of food will be produced in these highly technological commercial spaces and how much will they cost? What will these developments mean in terms of food accessibility, given the oppressive nature of the global food regime (See Fraser, 2016)? Such questions, bring attention to wider issues of access to futuring processes and distributive dimensions of the future visions created. It explicitly centres issues of injustices and unsustainability that are largely absent from other clusters of futuring. In short, by emphasising the political nature of ecological issues in the present, political ecology allows for an interrogation of apparently depoliticised, but actually highly political, visions contained in futuring approaches. It elevates the role of values and assumptions in decision making and the central role that a politics of knowledge plays in shaping futures.

Within political ecology, feminist political ecology (FPE) approaches call for explicit consideration of the gendered nature of knowledge and questions of resource access and control (Leach, 2008). FPE offers further analytical leverage in developing a critique of dominant approaches to futuring, emphasising politics and power at different scales and in different places, while also highlighting gender power relations and making an explicit commitment towards tackling gender disadvantage and inequality (Elmhirst, 2015). This helps address the traditional exclusion of women, feminist issues and issues of particular relevance for women from futuring activities (Gunnarsson-Östling, 2011), as well as gender inequalities in sustainability transitions more broadly (Clancy & Feenstra, 2019).

Beyond recognising the gendered dimensions to knowledge and hence futuring, recent work in FPE, and work inspired by it, has highlighted the importance of emotion, affect and embodied experience (Harris, 2015) in shaping the quality of life. Yet consideration of these qualities is almost entirely missing from dominant discussions of the futuring explored in this paper. Feminist political ecology demands that new questions are asked about the processes of futuring and considerations that are deemed appropriate within them, for example: What will it feel like to live in these futures and what ways of being will they support?

3.2 | Power and practices

Challenging the predominance of Western ontologies and epistemologies, to the marginalisation of other ways of knowing and existing, particularly in the Global South has been a central concern of critical development (Silvey & Rankin, 2010) and critical agrarian studies (Carlisle, 2014). These knowledges are anchored in the experiences of resistance of groups that have systematically suffered injustice, oppression, and destruction caused by capitalism, colonialism, and patriarchy (Santos, 2018) and so offer alternative ways of relating to and thinking about how the future could be. For instance, noting the fact that the contemporary crisis is the result of deeply entrenched ways of being, knowing, and doing, Escobar (2017) draws on ethno-territorial struggles that interrupt the global project of fitting all worlds into one market liberal paradigm for the transitions towards the 'Pluriverse', a world where many worlds fit. Relatedly, work on decolonising methods, inclusionary processes (Borda, 2006) and participatory action research's consideration of grassroots groups, the excluded and victims of dominant systems (Smith, 2012) offer direction here for futuring research.

Of course, not all participation is empowering (Li, 2011). For example, participatory rural appraisal techniques adopted in the 1990s by international development communities were as much about bounding the complexities of social life and formalising informal practices so that they can be more easily governed. Therefore, and bringing the focus back to futuring specifically, it is not enough simply to involve people in discussions of the future while leaving fundamental power relations and developmental logics intact. What is needed is to actively engage people in the framing of questions to be asked about their visions for the future. This is a familiar refrain in both critical agrarian studies and political ecology, which have long charted the power and politics underpinning "land control, territorialization and extraction in the service of techno-capitalist development" (Dunlap & Jakobsen, 2020, p. 43). To be a critical agrarian is not to preserve fixed social-natural ties, but rather to practice a powerfully open and dialogical engagement with the world and one another (Carlisle, 2014)

As outlined in the previous section, approaches to the future of food are dominated by elite-led, technological visions of the future whether it be in indoor urban vertical farming growing in soil-less environments and automated by robots, or large scale agricultural technologies within climate-smart agriculture (e.g. The World Bank, 2019). These food futures are portrayed as offering the solution to sustainability issues, in some cases even framed as growing food separate from natural processes, without soil, sunlight or water (Vyawahare, 2016). Such visions, whilst harbouring particular normative assumptions about human relationships with and to the environment, are wholly inattentive to the embodied nature of food and growing practices. It is assumed that people in the future will be unequivocal in their support of technologically-enhanced eating, something which is not borne out in literature (Davies, 2014a). As with FPE, a more critical perspective gives intellectual space to ask questions about the impacts of further distancing people from food grown 'in nature', such as a further loss of spaces to practice caring around food, and to experience the feeling of care, of putting hands in soil, planting seeds, and experiencing the emotional and physical wellbeing of growing food in community with others (Dobson et al., 2020; Morrow & Davies, 2022; Puig de la Bellacasa, 2015). Furthermore, it helps us to explore the subjectivities shaped by materialities of such techno-dominated futures. For instance, scholarship focused on Bangladesh and in southern Africa identify the shame, sadness or pride that can be connected to participation in resource management (Sultana, 2011; Goldin et al., 2008, in Harris, 2015). This research shows us that water and other resources such as food, "are not only essential for livelihoods and bodily health, but in fact are important to well-being and experience—including notions of exclusion and belonging" (Harris, 2015, p. 172). Mobilising poststructuralist ideas on power and subjectivity allows for more nuance in relation to how power and social relations of difference are constantly (re)produced in everyday interactions with socio-natures (Nightingale, 2006, 2011a, 2011b, 2013; Sultana, 2009 in González-Hidalgo & Zografos, 2020). Incorporating these ideas into futuring activities would elevate attention to the issues of exclusion within dominant futuring visions, and the need for voices and knowledges present in, but currently marginalised from, futuring practices.

3.3 | Diverse values and economies

Feminist economic geographers have shown that there are already existing activities which demonstrate more sustainable alternatives to dominant capitalocentric economic regimes (McKinnon et al., 2018; Roelvink et al., 2015). However, these activities are marginalised because they do not fixate on economic value creation in and through the market. In response, feminist economic geographers are seeking to expand economic vocabulary and understanding of exchange relations, widening the identity of the economic to include all of those practices excluded or marginalised by the current reading of late capitalism. This body of work, often collated under the banner of diverse economies research (Gibson-Graham, 2006; McKinnon et al., 2018), has also identified how considerable labour, such as caring duties or work within the home, is hidden from the market meaning they rarely count in decision making processes, particularly those which remain largely the preserve of experts and professionals such as futuring. There is a clear gender dimension to these debates, particularly in relation to caring economies that are often undertaken predominantly by women (McKinnon et al., 2018). As much futures work focuses on capitalist economic relations this obscures and undervalues alternative economic possibilities, ignoring these kinds of activities and the livelihoods of those who labour in them.

Diverse economies thinking lays out a different ontological framework for thinking about economic possibilities (Healy, 2020), within which we can begin to ethically explore the choices made to perform the economy and its future as either a singular inevitability or a field with a variety of potentials that is open to experimentation (St. Martin et al., 2015). By revealing these possibilities, diverse economies research helps to overcome a central challenge identified by Hajer and Versteeg (2019) in thinking of new possible worlds beyond those promoted by corporate futuring and focused on technological innovation. A diverse economies perspective demands that a broader range of options are imagined to be possible, even if they are not currently recognised as financially productive or mainstream activities. As others have noted, when humans imagine the future, they do so based on what they can imagine the world to be—so based on their current worldviews (Marshall & Connor, 2016). Thus, if already existing alternatives are left outside the frame of reference they will be ignored in the future visions created by dominant technical and elite narratives leading to a reproduction of the same problematic system. Creating a framework and approach for making visible these alternatives creates possibilities for visioning beyond the current system and identifying already existing meaningful and embedded solutions to social and environmental challenges.

3.4 | Towards fairer futuring

Taking a more critical stance to futuring would help to ensure greater visibility for marginalised voices and practices. The SHARECITY project, for instance, used participatory multistakeholder workshops and ethnographic research to gather overlooked insights of those involved in shared food practices including seed sharing, community gardening and community kitchens (Davies, 2019). In collaboration with an illustrator the project then developed images of possible future scenarios of urban food, which both platformed the marginalised perspectives of foodsharers (attending to politics and profiling diverse economies) as well as using visual elements such as colour scheme to communicate the feeling of different futures (attentive to the affective-emotive elements of such futures) (Fitzgerald & Davies, 2021). Inspired by Foucauldian interventions in futures thinking, relating to discourse and power (Wright, 2002), the process sought to make explicit political elements of possible futures in the alternative scenarios developed, but was also cognizant that an appearance of more democratic, participatory or progressive practice may still obscure disciplinary power and technologies of control (Anderson & Grinberg, 1998).

The complementary lenses of understanding the diverse and affectual dimensions of socio-nature experiences holds promise in identifying more just ways forward in addressing environmental issues. Such work—which could be considered as practising fairer futuring—highlights the importance of processes for achieving more sustainable futures and inclusive and participatory futuring approaches, recognising past injustices and seeking to make reparations for

them as well as placing distributional impacts of alternative futures front and centre of debates. A fairer futuring research agenda would focus not only on issues of broadening participation in creating future visions (e.g. procedural justice), but also on patterns of uneven power within the processes of how those visions themselves are created and implemented. This means considering the distributed impacts they will have on society (e.g. distributional justice) and recognition of past inequalities as well as current uneven power relations (e.g. restorative justice). Fruitful lines of research lie in bringing together, and being attentive to, diverse perspectives and economic activities as well as providing more critical, affective and emotional insights when futuring. Geographers, drawing on insights from FPE, feminist economic geography and critical agrarian and development studies, are well placed to further interrogate the interactions between facts, values and the imagination (Hulme, 2021) entangled in futuring processes. This could open an interesting collaborative space for critical physical and human geographers, for instance to analyse the material impacts of climate engineering in order to interrogate the assumptions underpinning such policy discourses.

4 | CONCLUSION

How we think about, characterise and approach the future will have real-world impacts both in the present and near future, as well as for the broader direction of societies long-term. Distilling insights from diverse areas of geography and relocating them into the world of futuring, as we have done in this paper, provides a useful navigational compass for including places and subjects previously excluded from futuring activities. This is important as geography matters in the interpretation and take-up of specific technical and economic logics that shape future imaginaries and fairer futuring would give greater opportunity for wider subjects to "resignify the spaces they inhabit" (Silvey & Rankin, 2010, p. 700) and also rescript the geographies of the future. We agree with Goode and Godhe (2017) that a more critical sphere of futuring is needed, one that acknowledges that futuring practices for sustainability transitions are not free from power and politics and have a duty to support matters of procedural, distributional and restorative justice. Geographers interested in fairer futuring should look within and also beyond the discipline, to ensure that the widest possible repertoire of ideas about possible futures are identified.

This paper provides a landscape view of futuring research with geographers in mind. Reviewing research and practice of futuring reveals a proclivity to favour technological-driven imaginaries of what could provide solutions to social and environmental challenges, seen manifest for instance in smart city visions (Hagbert et al., 2020; Lee et al., 2020; Leszczynski, 2016). Such bounding in the present risks further compounding existing economic, environmental and social issues into the future. In prioritising techno-driven solutions, dominant approaches to the future have real-world impacts, shutting down possible alternatives. Certainly, no futuring processes are neutral, all are based on a set of assumptions and parameters, and as such the visions they construct are positioned in relation to these. Creating more inclusive futuring practices and elevating marginalised perspectives in them is required to support the development of not only more just and sustainable futuring processes but also just outcomes.

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REFERENCES

Agyeman, J., & McEntee, J. (2014). Moving the field of food justice forward through the lens of urban political ecology. *Geography Compass*, 8(3), 211–220. https://doi.org/10.1111/gec3.12122

Anderson, G. L., & Grinberg, J. (1998). Educational administration as a disciplinary practice: Appropriating Foucault's view of power, discourse, and method. *Educational Administration Quarterly*, *34*(3), 329–353. https://doi.org/10.1177/0013161X98034003004

Barnes, T. J. (2008). Geography's underworld: The military-industrial complex, mathematical modelling and the quantitative revolution. *Geoforum*, *39*(1), 3–16. https://doi.org/10.1016/j.geoforum.2007.09.006

Barry, J. (2014). Green political theory. In V. Geoghegan & R. Wilford (Eds.), *Political ideologies: An introduction* (4th ed.). Routledge.

Bell, W., & Mau, J. A. (1971). The sociology of the future theory; cases, and annotated bibliography. Retrieved from http://www.jstor.org/stable/10.7758/9781610440394

Bentham, J. (2014). The scenario approach to possible futures for oil and natural gas. *Energy Policy*, *64*, 87–92. https://doi.org/10.1016/j.enpol.2013.08.019

Biffi, E., & Pali, B. (Eds.). (2019). *Environmental justice: Restoring the future*. European Forum for Restorative Justice.

Borda, O. F. (2006). The North-South convergence. *Action Research*, *4*(3), 351–358. https://doi.org/10.1177/1476750306066806

Camacho, C. (2013). Migration modelling in the new economic geography. *Mathematical Social Sciences*, *66*(3), 233–244. https://doi.org/10.1016/j.mathsocsci.2013.04.006

Carlisle, L. (2014). Critical agrarianism. *Renewable Agriculture and Food Systems*, *29*(2), 135–145. https://doi.org/10.1017/S1742170512000427

Castree, N. (2008). Neoliberalising nature: Processes, effects, and evaluations. *Environment & Planning A: Economy and Space*, *40*(1), 153–173. https://doi.org/10.1068/a39100

Clancy, J., & Feenstra, M. (2019). Women, gender equality and the energy transition in the EU. Retrieved from https://www.europarl.europa.eu/RegData/etudes/STUD/2019/608867/IPOL_STU(2019)608867_EN.pdf

Clune, S., & Pollastri, S. (2020). Design for food and wellbeing in future cities. In C. Boyko & R. F. D. Cooper (Eds.), *Designing future cities for wellbeing* (pp. 91–104). Routledge.

Curry, A., & Hodgson, A. (2008). Seeing in multiple horizons: Connecting futures to strategy. *Journal of Future Studies*, *13*(1), 1–20.

Davies, A. (2001). Hidden or hiding? Public perceptions of participation in the planning system. *Town Planning Review*, *72*(2), 193–216. https://doi.org/10.3828/tpr.2001.72.2.193

Davies, A. (2014a). Co-creating sustainable eating futures: Technology, ICT and citizen–consumer ambivalence. *Futures*, *62*, 181–193. https://doi.org/10.1016/j.futures.2014.04.006

Davies, A. (2014b). Environmental futures. In *The international encyclopedia of geography: People, the earth, environment, and technology*. Wiley-Blackwell; Association of American Geographers.

Davies, A., & Doyle, R. (2015). Waterwise: Extending civic engagements for Co-creating more sustainable washing futures. *ACME: An International E-Journal for Critical Geographies*, *14*(2), 390–400.

Davies, A. R. (2019). *Urban food sharing*. Policy Press.

Demeritt, D. (2001). The construction of global warming and the politics of science. *Annals of the Association of American Geographers*, *91*(2), 307–337. https://doi.org/10.1111/0004-5608.00245

Demneh, M. T., & Darani, Z. H. (2020). From remembering to futuring: Preparing children for anthropocene. *Journal of Environmental Studies and Sciences*, *10*(4), 369–379. https://doi.org/10.1007/s13412-020-00634-5

Dignum, M., Correljé, A., Groenleer, M., & Scholten, D. (2018). Governing through visions: Evaluating the performativity of the European gas target models. *Energy Research & Social Science*, *35*, 193–204. https://doi.org/10.1016/j.erss.2017.10.016

Dobson, M. C., Reynolds, C., Warren, P. H., & Edmondson, J. L. (2020). My little piece of the planet: The multiplicity of well-being benefits from allotment gardening. *British Food Journal*, *123*(3), 1012–1023. https://doi.org/10.1108/BFJ-07-2020-0593

Dunlap, A., & Jakobsen, J. (2020). Studying the worldeater(s): Political ecology and critical agrarian studies and their origins, differences and convergence. In *The violent technologies of extraction*. Palgrave Pivot. https://doi.org/10.1007/978-3-030-26852-7_3

Elmhirst, R. (2015). *The Routledge handbook of political ecology* (T. Perreault, G. Bridge, & J. McCarthy, Eds.). https://doi.org/10.4324/9781315759289

Escobar, A. (2017). *Designs for the pluriverse: Radical interdependence, autonomy, and the making of worlds*. Duke University Press.

Etherington, R. (2009). *Food probe by Philips design*. Dezeen.

European Commission. (2020). Strategic foresight report 2020. Retrieved from https://ec.europa.eu/info/strategy/priorities-2019-2024/new-push-european-democracy/strategic-foresight/2020-strategic-foresight-report_en%0Ahttps://ec.europa.eu/info/sites/info/files/strategic_foresight_report_2020_1.pdf

Fergnani, A. (2019). Mapping futures studies scholarship from 1968 to present: A bibliometric review of thematic clusters, research trends, and research gaps. *Futures*, *105*, 104–123. https://doi.org/10.1016/j.futures.2018.09.007

Ferguson, J. (1994). *The anti-politics machine: 'Development,' depoliticization, and bureaucratic power in Lesotho*. University of Minnesota Press.

Fitzgerald, L., & Davies, A. (2021). Food sharing futures. Retrieved from https://sharecity.ie/research/food-sharing-futures/

Fraser, A. (2016). *Global Foodscapes: Oppression and resistance in the life of food*. Routledge.

Fry, T. (2009). *Design futuring: Sustainability, ethics and new practice*. Berg Publishing.

Gibson-Graham, J. K. (2006). *Postcapitalist politics*. University of Minnesota.

Goldin, J., Rutherford, R., & Schoch, D. (2008). The place where the sun rises: An application of IWRM at the village level. *International Journal of Water Resources Development*, *24*(3), 345–356. https://doi.org/10.1080/07900620802127283

González-Hidalgo, M., & Zografos, C. (2020). Emotions, power, and environmental conflict: Expanding the 'emotional turn' in political ecology. *Progress in Human Geography*, *44*(2), 235-255. doi.org/https://doi.org/10.1177/0309132518824644

Goode, L., & Godhe, M. (2017). Beyond capitalist realism – Why we need critical future studies. *Culture Unbound: Journal of Current Cultural Research*, *9*(1), 108–129. https://doi.org/10.3384/cu.2000.1525.1790615

Gunnarsson-Östling, U. (2011). Gender in futures: A study of gender and feminist papers published in futures, 1969–2009. *Futures*, *43*(9), 1029–1039. https://doi.org/10.1016/j.futures.2011.07.002

Gupta, A., Möller, I., Biermann, F., Jinnah, S., Kashwan, P., Mathur, V., Morrow, D. R., & Nicholson, S. (2020). Anticipatory governance of solar geoengineering: Conflicting visions of the future and their links to governance proposals. *Current Opinion in Environmental Sustainability*, *45*, 10–19. https://doi.org/10.1016/j.cosust.2020.06.004

Hagbert, P., Wangel, J., & Broms, L. (2020). Exploring the potential for just urban transformations in light of eco-modernist imaginaries of sustainability. *Urban Planning*, *5*(4), 204–216. https://doi.org/10.17645/up.v5i4.3302

Hajer, M., & Versteeg, W. (2019). Imagining the post-fossil city: Why is it so difficult to think of new possible worlds? *Territory, Politics, Governance*, *7*(2), 122–134. https://doi.org/10.1080/21622671.2018.1510339

Hajer, M. A., & Pelzer, P. (2018). 2050—An energetic Odyssey: Understanding 'techniques of futuring' in the transition towards renewable energy. *Energy Research & Social Science*, *44*, 222–231. https://doi.org/10.1016/j.erss.2018.01.013

Harris, L. M. (2015). Hegemonic waters and rethinking natures otherwise. In W. Harcourt & I. L. Nelson (Eds.), *Practicising feminist political ecologies: Moving beyond the "green economy"*.

Healy, N., & Barry, J. (2017). Politicizing energy justice and energy system transitions: Fossil fuel divestment and a "just transition". *Energy Policy*, *108*, 451–459. https://doi.org/10.1016/j.enpol.2017.06.014

Healy, S. (2020). Alternative economies. In A. Kobayashi (Ed.), *International encyclopedia of human geography* (pp. 111–117). https://doi.org/10.1016/B978-0-08-102295-5.10049-6

Hebinck, A., Vervoort, J. M., Hebinck, P., Rutting, L., & Galli, F. (2018). Imagining transformative futures: Participatory foresight for food systems change. *Ecology and Society*, *23*(2). https://doi.org/10.5751/ES-10054-230216

Herbeck, J., & Flitner, M. (2019). Infrastructure coastal futures: Key trajectories in southeast Asian megacities. *Die Erde– Journal of the Geographical Society of Berlin*, *150*(3), 118–130.

Hulme, M. (2021). Universities should help break the wall between facts and values. Retrieved from https://www.timeshigher-education.com/blog/universities-should-help-break-wall-between-facts-and-values

IKEA. (2019). Home futures. Retrieved from https://ikeamuseum.com/en/almhult/exhibitions/home-futures/

Kallis, G., Paulson, S., D'Alisa, G., & Demaria, F. (2020). *The case for Degrowth*. Polity Press.

Kothari, U., & Wilkinson, R. (2010). Colonial imaginaries and postcolonial transformations: Exiles, bases, beaches. *Third World Quarterly*, *31*(8), 1395–1412. https://doi.org/10.1080/01436597.2010.538239

Leach, M. (2008). Earth Mother myths and other ecofeminist fables: How a strategic notion rose and fell. In *Gender myths and feminist fables* (pp. 67–84). https://doi.org/10.1002/9781444306675.ch4

Lee, J. Y., Woods, O., & Kong, L. (2020). Towards more inclusive smart cities: Reconciling the divergent realities of data and discourse at the margins. *Geography Compass*, *14*(9), 1–12. https://doi.org/10.1111/gec3.12504

Leszczynski, A. (2016). Speculative futures: Cities, data, and governance beyond smart urbanism. *Environment & Planning A*, *48*(9), 1691–1708. https://doi.org/10.1177/0308518X16651445

Li, T. M. (2011). Rendering society technical: Government through community and the ethnographic turn at the World Bank in Indonesia. In D. Mosse (Ed.), *Adventures in aid land: The anthropology of professionals in international development* (pp. 57–80). Berghahn.

Manley, D., Jones, K., & Johnston, R. (2017). The geography of brexit – What geography? Modelling and predicting the outcome across 380 local authorities. *Local Economy: The Journal of the Local Economy Policy Unit*, *32*(3), 183–203. https://doi.org/10.1177/0269094217705248

Marshall, J., & Connor, L. (2016). *Environmental change and the world's futures: Ecologies, ontologies and mythologies*. Routledge.

McKinnon, K., Dombroski, K., & Morrow, O. (2018). The diverse economy: Feminism, capitalocentrism and postcapitalist futures. *Handbook on the International Political Economy of Gender*, 335–349. https://doi.org/10.4337/9781783478842.00032

Millett, S. (2006). Futuring and visioning: Complementary approaches to strategic decision making. *Strategy & Leadership*, *34*(3), 43–50. https://doi.org/10.1108/10878570610660591

Moragues-Faus, A., & Marsden, T. (2017). The political ecology of food: Carving 'spaces of possibility' in a new research agenda. *Journal of Rural Studies*, *55*, 275–288. https://doi.org/10.1016/j.jrurstud.2017.08.016

Morrow, O., & Davies, A. (2022). *Creating careful circularities: Community composting in New York City*. Transactions of the Institute of British Geographers.

Nightingale, A. (2006). The nature of gender: Work, gender, and environment. *Environment and Planning D: Society and Space*, *24*(2), 165–185. https://doi.org/10.1068/d01k

Nightingale, A. J. (2011a). Beyond design principles: Subjectivity, emotion, and the (ir)rational commons. *Society & Natural Resources*, *24*(2), 119–132. https://doi.org/10.1080/08941920903278160

Nightingale, A. J. (2011b). Bounding difference: Intersectionality and the material production of gender, caste, class and environment in Nepal. *Geoforum*, *42*(2), 153–162. https://doi.org/10.1016/j.geoforum.2010.03.004

Nightingale, A. J. (2013). Fishing for nature: The politics of subjectivity and emotion in Scottish inshore fisheries management. *Environment & Planning A*, *45*(10), 2362–2378. https://doi.org/10.1068/a45340

OECD. (2016). Alternative futures for global food and agriculture. https://doi.org/10.1787/9789264247826-en

Oomen, J., Hoffman, J., & Hajer, M. A. (2021). Techniques of futuring: On how imagined futures become socially performative. *European Journal of Social Theory*, *25*(2), 252–270. https://doi.org/10.1177/1368431020988826

Polak, F. L. (1973). *The image of the future (Translation E Boulding)*. Elsevier Scientific Publishing Company.

Puig de la Bellacasa, M. (2015). Making time for soil: Technoscientific futurity and the pace of care. *Social Studies of Science*, *45*(5), 691–716. https://doi.org/10.1177/0306312715599851

Raven, P. G., & Stripple, J. (2020). Touring the carbon ruins: Towards an ethics of speculative decarbonisation. *Global Discourse*, *11*(1-2), 1–17. https://doi.org/10.1332/204378920x16052078001915

REINVENT. (2020). Rough planet Notterdam 2045.

Roelvink, G., St Martin, K., & Gibson-Graham, J. K. (2015). *Making other worlds possible: Performing diverse economies*. University of Minnesota Press.

Rose, N. (1999). *Powers of freedom: Reframing political thought*. Cambridge University Press.

Santos, B. D. S. (2018). The end of the cognitive empire. In *The end of the cognitive empire*. https://doi.org/10.1215/9781478002000

Sijmons, D., & Hajer, M. (2019). 2050 – An energetic Odyssey: Persuasion by collective immersion. *Scenario Journal*. https://scenariojournal.com/article/2050-an-energetic-odyssey/

Silvey, R., & Rankin, K. (2010). Development geography: Critical development studies and political geographic imaginaries. *Progress in Human Geography*, *5*(5), 696–704. https://doi.org/10.1177/0309132510385523

Sitch, S., Huntingford, C., Gedney, N., Levy, P. E., Lomas, M., Piao, S. L., Betts, R., Ciais, P., Cox, P., Friedlingstein, P., Jones, C. D., Prentice, I. C., & Woodward, F. I. (2008). Evaluation of the terrestrial carbon cycle, future plant geography and climate-carbon cycle feedbacks using five Dynamic Global Vegetation Models (DGVMs). *Global Change Biology*, *14*(9), 2015–2039. https://doi.org/10.1111/j.1365-2486.2008.01626.x

Smith, T. (2012). *Decolonizing methodologies: Research and indigenous peoples*. Zed Books Ltd.

Spangenberg, J. H. (2019). Scenarios and indicators for sustainable development: Towards a critical assessment of achievements and challenges. *Sustainability*, *11*(4), 942. https://doi.org/10.3390/su11040942

St Martin, K., Roelvink, G., & Gibson-Graham, J. K. (2015). Introduction: An economic politics for our times. In G. Roelvink, K. St. Martin, & J. K. Gibson-Graham (Eds.), *Making other worlds possible: Performing diverse economies*. University of Minnesota Press.

Sultana, F. (2009). Fluid lives: Subjectivities, gender and water in rural Bangladesh. *Gender, Place & Culture*, *16*(4), 427–444. https://doi.org/10.1080/09663690903003942

Sultana, F. (2011). Suffering for water, suffering from water: Emotional geographies of resources access, control and conflict. *Geoforum*, *42*(2), 163–172. https://doi.org/10.1016/j.geoforum.2010.12.002

Sultana, F. (2021). Political ecology 1: From margins to center. *Progress in Human Geography*, *45*(1), 156–165. https://doi.org/10.1177/0309132520936751

The World Bank. (2019). Future of food: Harnessing digital technologies to improve food system outcomes.

Tõnurist, P., & Hanson, A. (2020). Anticipatory Innovation Governance: Shaping the future through proactive policy making. *OECD Working Papers on Public Governance*, *44*.

Tussyadiah, I., & Miller, G. (2020). Imagining the future of travel: Technology and sustainability transitions. *E-Review of Tourism Research (ERTR)*, *17*(5).

UN. (2015). Transforming our world: The 2030 agenda for sustainable development. Retrieved from https://sdgs.un.org/publications/transforming-our-world-2030-agenda-sustainable-development-17981

Vervoort, J., & Gupta, A. (2018). Anticipating climate futures in a 1.5°C era: The link between foresight and governance. *Current Opinion in Environmental Sustainability*, *31*, 104–111. https://doi.org/10.1016/j.cosust.2018.01.004

Vyawahare, M. (2016). *World's largest vertical farm grows without soil, sunlight or water in Newark*. The Guardian.

Wade, R. H. (2019). East Asia. In D. Nayyar (Ed.), *Asian transformations: An inquiry into the development of nations. WIDER studies in development economics*. Oxford University Press. ISBN 9780198844938.

White, D. (2020). Just transitions/design for transitions: Preliminary notes on a design politics for a green new deal. *Capitalism Nature Socialism*, *31*(2), 20–39. https://doi.org/10.1080/10455752.2019.1583762

White, D. F. (2019). Ecological democracy, just transitions and a political ecology of design. *Environmental Values*, *28*(1), 31–53. https://doi.org/10.3197/096327119X15445433913569

Wiek, A., & Iwaniec, D. (2014). Quality criteria for visions and visioning in sustainability science. *Sustainability Science*, *9*(4), 497–512. https://doi.org/10.1007/s11625-013-0208-6

Wright, D. L. (2002). Applying Foucault to a future-oriented layered analysis in a post-bubble Japanese community. *Futures*, *34*(6), 523–534. https://doi.org/10.1016/s0016-3287(01)00078-7

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