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Food geographies 'in', 'of' and 'for' the Anthropocene: introducing the issue and main themes

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Introduction

While scientifically provisional, the "Anthropocene" concept – which posits a new geological era defined by human activity crossing planetary thresholds to reshape Earth and climate systems – has captured significant attention in human geography and across the humanities and social sciences (e.g. Castree, 2014, Castree, 2015, Lorimer, 2015, Haraway, 2016, Clark and Yusoff, 2017, Wright et al., 2018, Davis et al., 2019, Schmidt, 2019, Tsing et al., 2019, Clark and Szerszynski, 2021). This is perhaps not surprising given that it serves as convenient shorthand for a range of concerns related to how humans impact on the non-human world, how human activities fold into Earth's bio-physical and climactic systems, and the potential that exists for adverse consequences and catastrophic events. It is also a concept that resonates with themes in contemporary geographical scholarship. For example, it helps, in theory at least, to debunk the nature/society binary and dethrone human exceptionalism (Braun and Whatmore, 2010). It also challenges the moral geography of where certain people, things and practices belong (Schmidt, 2019) - highlighting the spatial processes that have shaped current relations while offering at least some degree of optimism for more sustainable and ethical futures.

The idea of 'the Anthropocene' therefore provides a useful way to think through all manner of human-environment processes and challenges. This is especially pronounced in relation to food and farming, which are heavily implicated in changes to the earth's biophysical and chemical processes. These changes have significant impacts on not just the availability of food, but also on how the connections between agriculture, eating and wider food relations can be understood (cf. Mol, 2021). The Earth, as Haraway (2016) reminds us, bears the scars of our agricultural heritage. Further, in the context of wide-ranging discussions of alternative ways of naming 'the Anthropocene' (on which more below), key theorists such as Haraway and Tsing (cf. Davis et al., 2019) have suggested that 'the Plantationocene' might be (more) apt. This is in recognition of how plantation logics, specifically the productionist logics that seek to service the market by rationalising bio-physical environments and controlling multi-species labour (see Coles, 2021), encapsulate and exemplify the processes that the Anthropocene thesis brings into focus. Yet, despite burgeoning interest in the Anthropocene as a concept, it is comparatively absent from recent developments in food geography. This is perhaps surprising given the profound impacts of food and agriculture on biogeochemical flows and geographical strata, and given future predictions regarding 'Anthropogenic climate change' (Head, 2016). There are, of course, notable exceptions and food geographers have made recent interventions in relation to e.g. alternative food networks (Beacham, 2018), broiler chickens and the biosphere (Bennett et al., 2018), alternative proteins and edibility (Sexton, 2018, House, 2018), consumption (Evans, 2019), food justice (Jones, 2019), more-than-human ethics of soil care (Krzywoszynska, 2019), and agri-food systems more generally (Reisman and Fairbairn, 2021). However, further work is needed to categorise emergent perspectives, marshal collective contributions to wider geographical and social theoretical engagement with the Anthropocene thesis, and to identify future research priorities.

The objective of this Theme Issue therefore, and the five papers that comprise it, is to redress this by directly connecting and drawing together social science scholarship that examines food geographies 'in', 'of' and 'for' the Anthropocene.[1] To begin, we note that despite the omission of food and farming from the main agenda of the UN Climate Change Conference (COP26) in Glasgow, there are very clear warnings from Science that we are 'living with' significant food and farming-related 'environmental troubles'. If current trends are left unchecked these troubles will take us beyond 'planetary boundaries', which in turn raises questions about the future of the Earth's bio-physical systems and the prospects for human (and indeed multi-species) life within them. The IPCC (2018) report, for example, warns that we have roughly 12 years to transform how we live if we are to avoid catastrophic climate change impacts, which includes changes to how we grow, process and eat food. Other food system and environmental threshold studies (e.g. Springmann et al., 2018, IPBES, 2019, IPCC, 2019, Willett et al., 2019) also call for radical change, especially to meat consumption, as well as reductions in food loss and waste.

Conceptual risks of conflating the Anthropocene with climate change notwithstanding, it is clear that such stark and apocalyptic warnings require insight and analysis from the Humanities and Social Science to complement the science. In addition to better understanding and articulating how such crises came to be, it falls to the Humanities and Social Sciences to address what might be done now and for the future. This invocation is captured by recent calls for a 'planetary turn' in the social sciences that embraces entanglements between social and planetary health (Clark and Szerszynski, 2021). To this we add that any concern with 'climate emergency' must be situated within wider contexts of a global health challenges (cf. Giraud et al., 2019) such as COVID-19, increasing food poverty, austerity politics, and social-ecological justice at the planetary scale.

In this vein, the remaining sections of this introductory article set out three ways of articulating food geographies of the Anthropocene, which we label 'in', 'of' and 'for'. The five papers that make up the Theme Issue engage with different aspects of the Anthropocene as spatial phenomenon and we integrate relevant arguments from each, alongside wider agri-food geographical scholarship, to explain what we mean by food geographies 'in', 'of' and 'for' the Anthropocene. In doing so, we respond to Tsing et al.'s (2019) call for a spatial as well as temporal treatment of the Anthropocene. These spatial expressions are also key to the proliferation of terms that have accompanied developments in Anthropocene scholarship. In addition to the aforementioned Plantationocene, which emphasises how plantation logics and the crises they call forth rest on the disordering of time and space across multiple species, we also flag the Capitalocene, which interprets ecological crises as the result of capitalism's global spread and the damaging logic of resource depletion and petrochemical dependency (Moore, 2016, Davis et al., 2019: 2); and Chthulucene, another multispecies intervention, in which human beings are not the only important actor, made up instead 'of ongoing multispecies stories and practices of becoming-with in times that remain at stake' (Haraway, 2016: 55). We then conclude this introduction by offering up some brief reflections on a future research agenda.

Food geographies 'in', 'of' and 'for' the Anthropocene

Pressure from an increasingly concerned public over the organisation of contemporary food provision has the potential to act as a driver of change (Brunori et al., 2019), and may be indicative of a new 'biopolitics' of food (Sexton, 2018). Consider debates about what we eat, for example, particularly

[1] Earlier versions of the papers were first presented at the Royal Geographical Society (with Institute of British Geographers) Annual Conference (2019). We are grateful to all the presenters and audience members that took part in those sessions and whose feedback and energy inspired us to organise this Theme Issue. Special thanks also to Editor-In Chief of *The Geographical Journal*, Darren Smith, for his input, support and guidance throughout the editorial process.

proteins in human diets, which have become a 'hot topic' in public discourse about human-induced ecological crisis (Maye et al., 2021). We see this amplified through multiple forms of discourse and social practice, such as increased media coverage on the negative impacts of livestock farming on the Earth's ecological systems, the rise of veganism and flexitarianism, and discussions about the possibility of introducing a meat tax. This Theme Issue approaches these food system pressures and public dialogues in generative terms. They necessitate, we argue, moving beyond 'anxious, pessimistic [food] politics of the Anthropocene' and towards 'working and playing for a resurgent world' (Haraway, 2016: 3). This includes developing a better understanding of storylines, narratives, perceptions and practices associated with food production and consumption, both now and into the future. Crucially, it requires paying close attention to critiques of the Anthropocene concept to identify different spatial expressions. We explain these differences below using the Theme Issue papers.

i. Food geographies 'in' the Anthropocene

This first approach is universalising in formulation and perspective. It recognises that food system transformation should be central to forge more sustainable futures but accepts the Anthropocene at face value. This is illustrated through the publication of the EAT-Lancet Commission's *Food in the Anthropocene* report (Willett et al., 2019) and their proposal for a universal global reference diet. Despite recognition that more plant-based diets will have regional variability, their framing is normative and, as Reisman and Fairbairn (Reisman and Fairbairn, 2021: 688) observe, falls into the trap of universalising human beings at the species scale despite the fact that we have "highly unequal contributions to global change and the role of structural inequalities in exacerbating environmental harm". Like the concept generally, it presents "a single, all-encompassing global story that risks erasure of alternatives" (ibid.).

The five papers in the Theme Issue are all equally critical of a singular universalising geographical perspective of the Anthropocene when applied to historical and contemporary discourses and empirical cases. They examine respectively: geographies of soy production to theorise a third planetary food regime (Beacham); the material-technologic, political-economic and sociocultural nexus of relations that gave rise to the modern broiler chicken within the Anthropocene (Coles); cellular dairy technologies in British Columbia, Canada (Newman et al.); urban food partnership initiatives in the UK working to 'reframe dietary power', i.e. develop initiatives to eat less meat and adopt plant-based diets to address the challenge of (de)animalisation (Morris et al.); and an historical account of the food geographies of Western Avadh, in the upper Gangetic plains of northern India (Nagavarapu and Kumar).

However, this warning about the homogenisation of geographies and storylines does not necessarily mean rejection of the concept, but a need for generative mobilisation as a source of critical insight (cf. Clark and Szerszynski, 2021). For agri-food geographers this means treating agriculture more as a site of political economic (and socio-cultural) processes that are accounted for and reimagined rather than as a set of impacts one should avoid (Head, 2016, Reisman and Fairbairn, 2021). One way to do this is to trace the common origin stories of the Anthropocene epoch (the dawn of agriculture, the emergence of capitalism, the Industrial Revolution, and the Great Acceleration of the mid-twentieth century) and to focus on food and agriculture at each moment to highlight the spatial unevenness of anthropogenic change (ibid., pp. 688-690). Nagavarapu and Kumar do this in their study, which we explain further in the 'geographies of' section. Beacham takes a different approach, using the Anthropocene concept to develop food regime theory, a well-established political economy framework that connects changes in patterns of food production and consumption to structures and processes of global capital accumulation and regulation (see e.g. Sage, 2013, Campbell et al., 2017). Beacham focuses on the much-contested contours of the third regime, which concerns contemporary (neo-) productivist, industrialised agri-food systems. The defining attribute in this third regime is a

more flexible system of capital accumulation. This remains valid, but Beacham argues that an under-acknowledged aspect is 'the conjoined relationship between human and planetary health'. The Anthropocene concept reinvigorates food regime theory to provide a key theoretical framework to understand trajectories and processes of the planetary food regime.

Collectively this analysis highlights the need to appreciate a universalising tendency when it comes to the Anthropocene and to point out this limitation for enacting meaningful food system change. This connects also to another key message that comes through in the papers, which is to expose the limits of techno-fixes but equally to not frame them bluntly and unproblematically as the enemy. The key point is that techno-fixes fit well with a universalising narrative enacted with moral legitimacy in the name of addressing Anthropocene pressures and they may reflect undisruptive socio-technical transitions depending on the underlying capitalist logics and change enacted, as noted by Goldstein (2018) in his analysis of 'green entrepreneurialism'. The paper by Newman et al. is particularly useful in this regard, highlighting the need to assess interactions over distances. Cellular technologies are viewed with optimism, as foodstuffs produced outside of animal bodies and instead inside labs and perceived to be more environmentally and animal welfare friendly (Jönsson, 2016). However, work on the land-use implications of such lab-based animal proteins is limited. Using the idea of telecoupling, which emphasises socioeconomic and environmental interactions over distance, their analysis questions lab-based dairy products capacity for land sparing. This does not deny the significant ecological benefits that these technologies might bring to particular places, but recognises potential increases in intensive agricultural activity in other regions to produce feedstocks for cellular agriculture, as well as wider impacts on individuals, communities and ecologies. This highlights the 'wicked' trade-offs embedded within the geographies of food 'in' the Anthropocene.

ii. Food geographies 'of' the Anthropocene

Thus, this second approach is historically and spatially nuanced, emphasising uneven power relations and struggles between human groups, places and regions (Reisman and Fairbairn, 2021: 692), with significant inequalities in the name of agri-food socioecological transformation. Critical Anthropocene scholarship is instructive here, particularly the 'patchy Anthropocene' (Tsing et al., 2019) and calls to 'provincialise the Anthropocene' (Morrison, 2017). Nagavarapu and Kumar's historical account of the food geographies of Western Avadh echoes this need for a more nuanced spatial approach. Their account fits neither Anthropocene nor Capitalocene framings. Rather, as they put it, the oral histories and data they collected 'kept spilling out of the frame'. Echoing Scott's (2017) account of early agriculture, their food geography of the region starts with analysis of the region's more-than-human pre-colonial landscape, revealing a physically heterogeneous landscape that challenges homogenous storylines of agriculture transitioning from foraging and pastoralism to settled agriculture. They then trace how the colonial state pushed people from different occupations onto the land to expand cultivation and therein deploy strategies to make land more productive, including the ways that ecology and people continue to resist such State incursion. These patterns emerge through a particularly revealing account of the introduction of groundnut as a cash crop, introduced by the colonial state but shaped by local agroecology. Groundnut was well-suited to the region's sandy soils, and therefore deployed to make them 'productive' and thus enrol the region into the logic of the State. Concomitantly, groundnut was adapted into food preparation for the local palate, becoming natruralised into the local diet as a nutritious oilseed. Colonial rule no doubt had debilitating impacts on people and land, but this was 'patchy' precisely because of the embeddedness of human activity in agroecology and the riverine landscape. They examine also more recent shifts in the nexus of agriculture, diet and food practices, discussing, for example, how sugarcane and the ban on the slaughter and transport of cattle came together in contingent ways in post-independence. This shows how food geographies in the region were the result of a variety of factors and the influence of multiple human and non-human actors over time.

Coles' account also details the uneven social-spatialities and colonising logics that have come to drive much of contemporary food provision. Treating the modern broiler chicken as an objective corollary for the Anthropocene and its manifold effects, he positions food geographies '*of*' the Anthropocene within the social-spatial practices of agri-capitalism to reveal the ways in which it simultaneously makes often obfuscated connections between disparate places, whilst displacing, disrupting and otherwise enrolling local processes into its reproduction. The Anthropocene is emergent through assembled relations and practices and the paper proceeds to trace-out how its particular logics, tendencies and displacements have emerged over time – focusing particularly on the displacements of labour and the rationalising logic of the State/agricultural complex. The outcome is to reveal seemingly ever-shifting fields of new connections and disruptions between multiple non-human, human actors and institutions that become the mark of the Anthropocene more widely.

Morris et al. likewise make an excellent case for spatial nuance but by drawing attention to the urban scale as a site for action to support plant-centred eating. The over-production and consumption of food from animals, and the 'animalisation of diets' (Fourat and Lepiller, 2017), is a key feature of food in the Anthropocene. Developing strategies at appropriate scales to reduce animal-based food consumption is an important policy priority. However, research into (de)animalisation undertaken at global and national scales tends to neglect other spaces and scales of action, including those of the urban. The potential of urban food networks to govern food system change is now widely recognised (Marsden and Morley, 2014), with urban governments developing various food plans, policies and strategies to address a range of food sustainability issues within integrated policy frameworks (Mansfield and Mendes, 2013). Building on this scholarship, Morris et al. highlight the role cities and urban food governance initiatives could play in developing institutional-level strategic responses that encourage citizens to eat less meat. Using document analysis of initiatives and interviews with urban food governance stakeholders, their analysis reveals 'a plant-centred biopolitical project in the making', which has potential to influence dietary change, but the specific actions of partnerships also run counter to or are in tension with the promotion of plant-based eating (projects related to food poverty or local economic development, for example). The urban scale thus offers hope as a space for change, but as the case illustrates, the messy distributed nature of agency alongside the tensions at play when it comes to dietary interventions might seem to discipline what we eat.

iii. Food geographies 'for' the Anthropocene

This third approach comes from a moral geography perspective (Schmidt, 2019), emphasising care, food systems as sites of agency, and the Anthropocene as 'more-than-human' entanglement (Haraway, 2016). It is about building food futures and thinking in ways that are alive to the underlying inequalities and socio-ecological complexities that accompany the prevailing organisation of food systems. This includes strategies to foster more-than-human ethics of care and responsibility that is rooted in and for place (of the kind erased by plantation logics), 'hopeful' food geographies (Head, 2016) and generative political frameworks to enable sustainable equitable transitions (Arnold et al., 2022). All Theme Issue papers speak, in different ways, to at least parts of this future making agenda.

This manifests in multiple ways. Foremost, as evidenced through Nagavarapu and Kumar's work, is the need for research that 'provincialises the Anthropocene' with, in their case, histories of landscape. This, they argue, should be 'constitutive of the norm' rather than outliers to a Euro-centric vision of global change. This call to decolonialise Anthropocene food geographies is critical to enable epistemic justice and to avoid depoliticising the ecological crisis and unequal power relationships. Drawing from (Tsing, 2009, Tsing, 2015), Coles builds on this prospect and proposes nexus thinking to understand Geographies *of* the Anthropocene to provide a conceptual and methodological basis through which to develop a geography *for* the Anthropocene. Such a geography is built not only on connectivity

between places and spaces of production and consumption but on enhancing a 'geographical awareness' (Sack, 2003) of how these disparate (and local) spaces and places are articulated.

Then we have a political economy a*nd* moral economy of meat and alternative proteins. A number of the papers touch on this topic and reach different conclusions. One reading is to frame the emerging and rapidly expanding markets for alternatives to meat and dairy as 'a more critically optimistic dimension' of food regime theory (Beacham). New protein markets and technologies have political economy and ethical consequences, and an emerging socio-metabolism, as resources and energy cycles flow differently through the biosphere, with planetary consequences. In this regard, Newman et al's use of policy scenarios combined with telecoupling emphasises the need for spatial justice in sustainable food production consumption policy thinking in order to avoid an unequal distribution of costs and benefits as the alternative protein transition advances. The policy scenarios for cellular dairy (baseline incentives, incentives with eco-certification, and incentives with local sourcing of feedstocks) explored with stakeholders in British Columbia, for example, provided a rich medium to assess potential outcomes and underscored the necessity for multiscale thinking. By introducing ideas of spatial justice, multi-scale thinking is essential to inform creative foresight and deliberative work with multiple stakeholders for meaningful food system analysis. It also requires careful and coherent visioning. Morris et al. found this to be lacking in their work with urban food governance actors who struggled to consistently engage with debates about animal-based foods to reframe dietary biopower.

Towards a future research agenda

This Theme Issue provides an important platform to develop research in a way that avoids human exceptionalism in transforming Earth-human-food system relations. An important first step in this regard is to c*onceptualise food geographies 'in', 'of' and 'for' the Anthropocene*, including accounts that ground and potentially unsettle food and the Anthropocene as Capitalocene (Moore, 2016) and food and the Anthropocene as more-than-human (Haraway, 2016). A second step is to a*ddress key contemporary Anthropogenic agri-food relations*, especially those that are already in flux or transition. Some of these are covered in the five papers that follow while others still need future research. These include: remaking agricultural geographies for the Anthropocene (characteristics, farming and food ontologies, storylines, practices); metagenomics and soil care; geographies of livestock production; meat and meat alternatives in/for the Anthropocene; telecoupling and the biopolitics of proteins; dietary change and the geographies of new food in/for the Anthropocene; urban food networks and governance; cultures, practices and political economies of food consumption; and new metrics and norms for sustainability, accountability and responsibility. These can reasonably be thought of as possible futures in the making, in turn inviting questions about which to prioritise and what it might mean to reconfigure agri-food relations in a more ethical and sustainable register.

A final priority for future research, then, is to deepen and extend the *ethics of care and moral food geographies of the Anthropocene imperative,* including strategies, methodologies and interventions that offer 'hopeful' perspectives. This includes understanding how agri-food practices and innovations refract back in terms of challenging what we mean by 'the Anthropocene' as a moral compass for planetary multi-species agri-food politics, or as Schmidt (2019) prefers, a moral geography of the earth system. This Theme Issue builds on previous work on food and the Anthropocene in Geography, notably Reisman and Fairbairn (2021), and opens up novel conceptual and empirical ground. We hope that the papers and the debates they raise will engender further critical food geographies and food system scholarship, including working with scholars from wider social and natural science disciplines to reinterpret the Anthropocene (and related concepts) for climate change, human-environment systems, nature-human relations, and above all kinship.

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