Development Review

Food politics and development

Melissa Leach [b], Nicholas Nisbett [b], Lídia Cabral [b], Jody Harris [b], Naomi Hossain [a], John Thompson [b]

[a] Accountability Research Center, American University, School of International Service, 4400 Massachusetts Ave, NW Washington, DC 20016-8001 USA
[b] The Institute of Development Studies (IDS), University of Sussex, Falmer, Brighton BN19RE, United Kingdom

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ABSTRACT

Food has become both a pivotal topic in development and a lens through which to integrate and address a range of contemporary global challenges. This review article addresses in particular the interrelationship between food and sustainable, equitable development, arguing that this is fundamentally political. We offer a set of approaches to understanding food politics, each underlain by broader theoretical traditions in power analysis, focused respectively on *food interests and incentives; food regimes; food institutions; food innovation systems; food contentions and movements; food discourses*, and *food socio-natures*. Applications of these approaches are then illustrated through a set of problematiques, providing a (selective) overview of some of the major literatures and topics of note in food politics and development. Starting with the role of the state and state-society relations in different forms of food regime, we then consider the role of science and technology (and its discourses) in shaping agricultural and food policy directions before looking in more detail at rural livelihoods in agri-food systems and the politics of inclusive structural transformation. Broadening beyond agri-food systems then brings us to interrogate dominant narratives of nutrition and review literature on the cultural politics of food and eating. A concluding section provides a synthesis across the cases, drawing together the various approaches to power and politics and showing how they might be integrated via an analytical framework which combines plural approaches to describe different *pathways* of change and intervention, raising critical questions about the overall direction and diversity of these pathways, their distributional effects, and the extent of democratic inclusion in decisions about food pathways. We find this extended '4D' approach helpful in highlighting current food systems inequities and the political options for future food systems change, and conclude by considering how it might be harnessed as part of a future interdisciplinary, engaged research agenda.

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E-mail addresses: m.leach@ids.ac.uk (M. Leach), n.nisbett@ids.ac.uk (N. Nisbett), l.cabral@ids.ac.uk (L. Cabral), j.harris@ids.ac.uk (J. Harris), hossain@american.edu (N. Hossain), j.thompson@ids.ac.uk (J. Thompson)

1. Introduction

1.1. Food politics as central to development

Food has become a pivotal topic in development, capturing high level attention in international policy debates, and amongst global, national and local actors. Food implicates matters of production, reproduction, distribution, consumption – and the interlinkages between these, across global, national and local scales. Food also incorporates questions of economy, state-society relations, and environment, as well as intimate issues of personal, social, cultural and bodily status and identity. Because of this capaciousness, food provides a vital lens through which to integrate and address a range of contemporary development challenges. Yet food is also a political matter, with questions of how food systems are constituted, how they change (or do not change), and who gains or loses implicating power relations of many kinds, between diverse actors. As modern food systems prove themselves neither sustainable nor equitable, with profound and intergenerational consequences for human wellbeing, health and prosperity, these politics have become highly charged. An intense politics of food is unfolding across the world, albeit in diverse ways.

This article reviews these political processes and addresses how they might be conceptualised, considering how and why a range of theoretical and disciplinary approaches is necessary to capture their extent and range. In so doing, we cast new light on the politics of food and, in particular, on the opportunities and challenges to build more equitable, sustainable food systems – as well as on the broader politics of development in which these are embedded.

Our review acknowledges the longstanding intersections between food and international development policy, rhetoric and action. Malthusian concerns with feeding growing populations dominated colonial and post-war development and structured many policy approaches, extending from agriculture to environment, science and technology, infrastructural investment, population control and trade. Many of these were later consolidated in the creation of the 'Rome based agencies': The Food and Agriculture Organization (FAO), the World Food Programme (WFP) and the International Fund for Agricultural Development (IFAD). Since 2015, the UN Sustainable Development Goals (SDGs) have come to dominate policy discourse and action. With the adoption of Agenda 2030, the international community committed itself to eradicating hunger and poverty and to achieving other important goals, including making agriculture sustainable in the production and distribution of food, securing healthy lives and decent work for all, reducing inequality in both production and consumption of food, and making economic growth inclusive. It is increasingly recognised that the place of food and nutrition in the SDGs goes far beyond Goal 2 (Zero Hunger), to encompass synergies and tensions with many other goals; for instance (Béné et al., 2019) in a previous World Development review explore the intersections with a range of goals and indicators concerning environmental sustainability, while there is growing acknowledgement of the importance of equitable food system to SDGs concerning poverty (Goal 1), inequality (Goal 10), and gender equity (Goal 5) (ISSC, IDS, & UNESCO, 2016; Leach et al., 2018; Leach, 2015).

Nevertheless, high level policy rhetoric belies a world far off course to meet these laudable aspirations. For decades, the number of hungry people in the world has been declining, but this pattern has reversed in recent years. New estimates indicate that global food insecurity and malnutrition persist and remain stubbornly high, with almost 822 million people continuing to suffer from hunger and nearly 2 billion people experiencing some form of malnutrition. Obesity is rising, levels of micronutrient deficiencies have stagnated (FAO, IFAD, UNICEF, WFP, & WHO, 2019) and unhealthy diets are now considered the leading global cause of (non-communicable) disease (Afshin et al., 2019). Dominant trends in food production are also damaging ecological and earth system processes, contributing up to half of greenhouse gas emissions, destroying biodiversity, degrading topsoil, and throwing nutrient cycles out of balance – making major contributions to overshooting so-called planetary boundaries (Steffen et al., 2015). At the same time, conventional food production processes are keeping many workers and farmers in a state of powerlessness and poverty, violating human rights. Recently, the COVID-19 pandemic and its far-reaching effects have further exposed the multiple fragilities and vulnerabilities in contemporary food systems (IPES-Food, 2020). While these trends in themselves are not the focus of this review, they add up to a worrying picture in which current food system configurations are badly undermining broader development agendas, including the SDGs. In this context, there are urgent calls for food systems to be reformed, or indeed more fundamentally transformed (De Schutter, 2017; IPES Food, 2015; Oliver et al., 2018).

In this review we seek to show how politics, power and social justice might be brought more fully into these growing international concerns with food, hunger and nutrition. International policy rhetoric around food, including in the SDGs, is often driven by technocratic language and assumptions about incremental policy reform which obscure vital cross-cutting questions of power and politics. By exploring the diverse ways in which food system change is necessarily and deeply political, we aim to contribute to a more transformational politics of food towards systems that are more sustainable and equitable.

In discussing 'food systems' we note that the term has become itself something of a development 'fuzzword' (Cornwall, 2007): a shared language amongst diverse actors obscuring sometimes opposing viewpoints on meaning and implications. Many actors now advocate a shift towards food systems thinking. While for some this means drawing on systems science, to others it has come to justify a political agenda which advocates greater appreciation of the private sector's role in delivering industrialized food[1], and to yet still others, thinking 'systemically' means focusing critically on the root, political and structural causes of food injustices. Whilst recognizing that these diverse food systems framings can work to obscure politics as well as illuminate them (Nisbett, 2019), we are guided here by two depictions of the food system. The first is a definition by the International Panel of Experts on Sustainable Food Systems (IPES-Food), which draws from both critical and systems science traditions to make valuable points about dynamism, complexity and scale, defining food systems as: 'the web of actors, processes, and interactions involved in growing, processing, distributing, consuming, and disposing of foods, from the provision of inputs and farmer training, to product packaging and marketing, to waste recycling. A holistic food systems lens is concerned with how these processes interact with one another, and with the environmental, social, political and economic context (Ericksen et al., 2010). The food systems lens also brings to light reinforcing and balancing feedback loops, tensions between the different components and flows of food systems, and interactions that are cyclical, multilayered and multi-scale.' (IPES Food, 2015a:3). These processes are present in the second depiction, a graphic from the High Level Panel of Experts on Food Security and Nutrition (HLPE), which advises the UN Committee on Food Security (Fig. 1), which offers a fairly detailed depiction of different dimensions of a food system. Reading the accompanying reports (IPES Food, 2015; HLPE, 2017), we see that together they provide different but complementary perspectives of the role of power and politics in relation to food systems: in the HLPE diagram, it seems, politics figures first at the top of the dia-
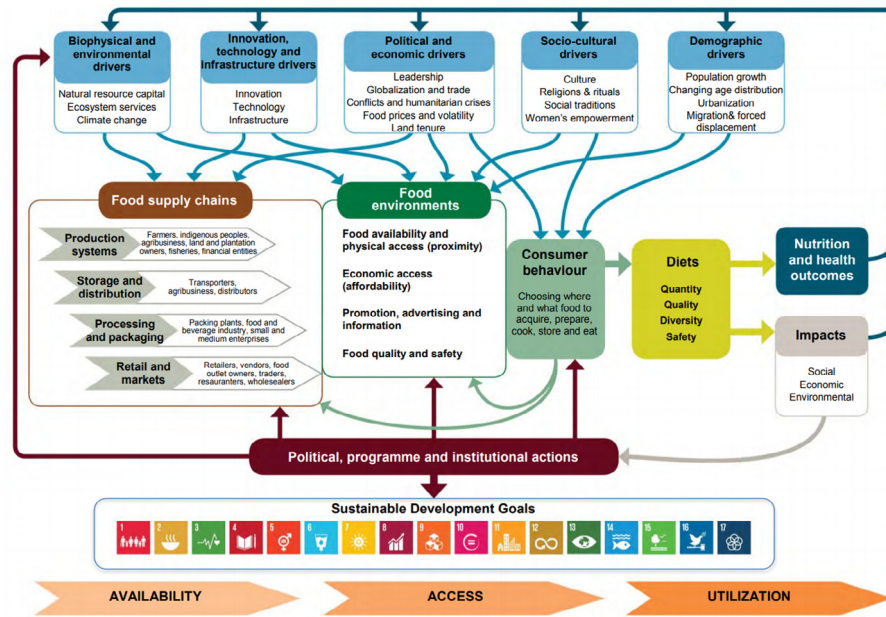
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[1] See e.g. https://www.weforum.org/projects/strengthening-global-food-systems.

Figure 1. Conceptual framework of food systems for diets and nutrition. Source: HLPE. 2017. Nutrition and Food Systems, Rome. http://www.fao.org/3/a-i7846e.pdf Reproduced with permission.

gram, as one of a number of 'drivers' and more centrally, in the box at the bottom, on political, institutional and policy processes. Our review article in effect unpacks this bottom box. But more than that, and drawing on perspectives from IPES-Food, it conceptualises power and politics as infusing the whole food system, relevant to all drivers, elements, relationships and dynamics.

2. Key approaches to food politics and power

There are a number of ways in which food politics are understood and addressed in established literatures, embedded in more general research traditions and theories of power. Through this review, we develop the argument that much work on food – including that which has come to dominate literature and related policy debates – takes a narrow view of power and politics and is often confined to disciplinary silos. To understand and address food politics requires approaches to be broadened, deepened and combined.

Table 1 outlines a set of approaches used in food literatures and policy, with references to selected examples of studies that have used these to analyse food systems change. We give each of these food politics approaches a stylised, summary title, while recognising that each brings together diverse bodies of work. For each approach, we note how power is located and conceptualised, and therefore how change in the food system is seen to take place. Each of these food politics approaches draws from broader, underlying disciplinary and theoretical perspectives in the analysis of politics and power, developed in relation to other issues and domains of change. Thus what we term *food interests and incentives* draws from long traditions of methodological individualist and rational choice perspectives, such as those found in neoclassical economics, as well as in pluralist perspectives in political science (e.g. Mills, 1956; Dahl, 1957). In this view, it is presumed that change will come from altering the market or behavioural incentives to individual actors, so altering interests and decisions, and therefore food system outcomes – whether these actors are farmers making production choices, or consumers making decisions about what to buy (World Development Report, 2008). Broadly speaking, in such works power is conceptualised as the observable capacity to do

something; what Lukes (1974) characterises as 'power over' and Gaventa (2003, 2006) as 'visible power'.

In contrast, the approach we term *food institutions* is grounded in broader institutional perspectives in economics, political science and political economy analysis. Here power is conceptualised as embedded in and operating through institutional arrangements, or the 'rules of the game' (North, 1991), both in visible and hidden ways (Gaventa, 2006). Such institutions might be formal or informal, extend from those at household, community, government or international level; institutional perspectives have also been applied fruitfully to the analysis of market and global value chains (Clapp, 2012). Change might take place via norm and rule changes in particular institutions, or shifts in the relative power and influence of different institutions.

Food regimes approaches take a more structural and historical perspective, drawing from world systems theory (Friedmann & McMichael, 1989) and historical-materialist political economy analysis stretching back to Marx. Power inheres in historically-shaped political, social and value regimes, including relations between states and capital, and their supporting ideologies. Change requires overhaul of the whole regime, which may come about as tensions build to generate revolutionary counter-politics (Gramsci, 2000) or as crises open up opportunities for transformation (Polanyi, 2001 [1944]). Global geo-political arrangements, corporate capitalism, or state governance structures exemplify broader regimes relevant to food systems.

Food contentions and movements approaches locate relatively more power and agency – capacity to bring about change – in 'bottom-up' social mobilization and collective action, countering dominant power and interests. Such approaches are grounded in broader contentious politics theory and social movement theory (Tilly & Tarrow, 2015) which have variously explored the capacity of collective mobilizations to reframe agendas, expose hidden power, challenge dominant interests and bring alternatives to the fore, whether around economic/class interests or emergent social or environmental issues. Perspectives on identity and representation in anthropology and sociology highlight how identity politics can serve both to unite and to fragment movements (Castells, 2011). Movements may be localised, operate within national con-

Table 1
Stylised approaches to understanding food politics and power.

Food politics approach	How power operates/change happens	Underlying disciplinary and theoretical perspectives	Selected example references in food-related literature
Food interests and incentives	Decisions and choices by rational actors responding to shifting incentives; power as overt ('power over')	Pluralist models in political science; neoclassical and behavioural economics; instrumental policy analysis	World Development Report, 2008
Food institutions	Norms and rules of the game, governance structures and processes, collective action ('power to')	Institutional economics; institutional political economy analysis; governance institutions; value chains	Clapp (2012), Howard (2016)
Food regimes	Contemporary regimes derived from historical state-capital alliances	World systems theory; historical materialism; structural marxism	Friedmann and McMichael (1989), Bernstein et al. (2018), Tilly (1975), Patel (2013b)
Food contentions & movements	Social mobilization and struggle in contexts of contention; people's power to frame and contest agendas	Social movement theory; contentious politics theory; identity politics; networks	Borras et al. (2008), Patel (2009), Edelman (2003), Walton and Seddon (2008), Hossain and Scott-Villiers (2017), Pimbert (2017)
Food innovation systems	Power as diffused through socio-technical systems, channelling path-dependencies, or 'lock-ins'	Socio-technical systems; socio-ecological systems; multi-level perspective in innovation studies	Food (2016), Scoones and Thompson (2008), Thompson and Scoones (2009)
Food discourses	Interplay of diverse, socially and politically positioned knowledges; narratives and discourses embodying power; challenge to ideas and narratives of male, white, western, heterosexual humans	Poststructural theory, power/knowledge and discourse theory; deliberative governance; anthropology and sociology of knowledge, feminist, anti-racist and decolonial critiques	Sumberg and Thompson (2012), Van Esterik (1999), Pimbert (2017), Hayes-Conroy and Hayes-Conroy (2013)
Food socio-natures	Non-human or nature-culture hybrids have their own agency; responsiveness to diverse ways of being, and socio- natural agency and signals	Cultural geography; political ecology; ontological turn in anthropology; deep-ecological, posthuman, indigenous thought	Moragues-Faus and Marsden (2017), Haraway (2016), Alkon (2013), Frausin et al. (2014)

texts, or connect up into trans-national, trans-local and sometimes trans-issue networks.

Approaches based on *food innovation systems*, like those to food movements, conceptualise power and agency as relational and diffuse, rather than held by a single actor or institution. Drawing on broader systems perspectives in ecology (Berkes et al., 2003), socio-technical and innovation studies (Geels, 2005), the focus is on particular system features – elements, drivers, levels; their dynamic, often complex interactions, and the interplay of innovation, learning and adaptability in bringing about change across scales. Power and politics are a relatively recent focus in these broader literatures, bringing attention to how systems become 'locked in' to follow path-dependent patterns or to resist change, and to explore how 'niches' as sites for innovation can scale up and out to bring about wider transitions (Geels, 2004). Innovation system perspectives tend to retain a focus on particular system categories—like 'actors' and 'levels'—and to see change happening through incentives, investments and policy initiatives, usually led by the state, but often in alliance with others, across the private sector and civic groups

Moving down the table, what we gloss as *food discourses* encapsulates multiple perspectives which locate power more firmly in ideas, rather than people, institutions or systems, and see power exercised via the ability to construct or control the framing or narratives – storylines – around a given issue. Knowledge and ideas are variously conceptualised as rooted in ideologies, everyday practices, and particular ways of thinking, and in formal and informal kinds of expertise. Foucauldian perspectives emphasise the mutual embedding of power/knowledge in discourse (Foucault, 2012; Rabinow, 1991). The concept of discourse as underlying social action has been applied to the field of development and the process of policymaking (Grillo & Stirrat, 1997; Mosse, 2004); studying discourses can reveal power relationships in society as expressed through language and practices.

Building on this, a diversity of perspectives from anthropologies, sociologies and feminist, decolonial and queer critiques highlight the co-construction of power, knowledge and social positions, identities and hierarchies. These perspectives open up challenges to power through asserting a greater diversity of (positioned) knowledges around any given issue.

Finally, what we term *food socio-natures* extends concern with diverse ways of knowing, to diverse ways of being (ontologies), especially those recognising the fluid boundaries and interdependencies between human and non-human natures. Drawing variously from recent perspectives in cultural geography (Braun & Castree, 2001), political ecology (Perreault et al., 2015), and the ontological turn in anthropology (De Castro, 2015; Kohn, 2015) as well as aspects of indigenous (TallBear, 2017; Todd, 2016) and deep ecological thought, this approach understands change as involving also the agency of plants, animals and other aspects of non-human nature, with which human action is interdependent and mutually constituted in 'assemblages' (Haraway, 2016). Power inheres both in the diffuse, capillary networks through which socio-natures are defined and unfold, and in the relations of dominance and control through which people and institutions sometimes attempt to override socio-natural signals.

All these approaches have relevance to a diversity of actors and relationships, and a variety of scales – local, national, global. As other theorists and activists have noted, there is potential to combine different conceptualizations and sites of power in understanding change and transformation. The power cube, for example (Gaventa, 2006) offers a richer conceptualization by attending to power on multiple *levels*, referring to the differing layers of decision-making and authority held on a vertical scale, including the local, national and global; in multiple *forms*, referring to the ways in which power manifests itself, including its visible, hidden and invisible forms; and in multiple *spaces*, referring to the potential arenas for participation and action, including so-called closed, invited and claimed spaces. Scoones et al. (2020) describe how what they gloss as structural, systemic and enabling perspectives on power can be combined in understanding sustainability transformations.

With respect to food politics, all of these approaches have value, but each on its own offers only a partial view; each is in and of

itself incomplete. While they all have their merits and limitations, we note that much public and even some academic discourse tends towards imposing simplistic binary choices along some of the divisions in Table 1 overlaid with broader political orientations to the left or the right, the state or the market. Such simplifications pose serious limitations in conceptualizing our core concerns with food system transformation towards greater equity.

3. Overview of article

Given the danger of simplification, we initially eschew proposing an overall conceptualization of food system transformation which combines and integrates all the food politics approaches summarised in Table 1. Instead, in the sections that follow we review and illustrate how particular approaches, and combinations of approaches, have been, and can be, used to illuminate particular questions of food systems change.

We do so by addressing a series of 'problematiques', each focusing on a particular topic or aspect of the food system; asking what sort of change is happening (or is not happening), and instantiating selected food politics approaches in analysing such change. Our aim is not to cover, comprehensively, the multitude of processes represented in Fig. 1's depiction of the food system, but to cover the dynamics in and between certain parts of the food system within the context of our problematiques. In order to illustrate the food politics approaches, we have also focused on aspects of the food system where there are relatively substantial, relevant literatures. This has led us to focus relatively more on some topics and dimensions of Fig. 1 (including food production, agriculture and 'agri-food', nutrition and diet), and relatively less on others (such as food distribution and processing). As we highlight in the conclusion, such gaps constitute areas for future research. Our chosen problematiques read together also provide a broad, though partial, historical sweep, locating contemporary food politics in debates and actions extending back to the early colonial period, through to post-war science and technology, to contemporary debates on diets and the changing socio-natures of food.

Thus the first section, 'State power, globalization, and state-society relations in the food system', illustrates primarily the *food regimes* (and partly, *food institutions* and *food contentions and movements*) approaches in Table 1. This sets the scene for the sections that follow in providing an implicit critique of *food interests and incentives* approaches. The section reminds us that broader geopolitical and national calculations behind the maintenance of elite power are never far from —or are strongly implicated in – state decisions around food which affect poor people's daily lives such as food or fuel subsidies, trade policy or food aid. Yet state-led decisions are both fragile, and often challenged by social movements.

In the second and third sections, we address how power relations have played out in shaping food production, technological change and livelihoods. These sections fuse *food institutions* with *food innovation system*s approaches, whilst also attending to the politics of knowledge as highlighted in *food discourses*. Thus the second section, 'Agri-food science and technological innovation from the mid-20th century', chronicles the historical development of green revolution technologies and their associated narratives to understand the material and discursive 'lock-ins' of dominant agri-food pathways and associated science and technology. The third section, 'Rural livelihood trajectories, agri-food systems and inclusive structural transformation', charts how this plays out in terms of some of the social, environmental and commercial constraints on choices faced by farmers themselves in contemporary sub-Saharan African settings dominated by rural livelihoods.

In the fourth and fifth sections we continue the movement down Table 1 to bring in further approaches which challenge dominant ideas, narratives and cultural perspectives, and address alternatives, as suggested by *food discourses* approaches. The fourth section, 'Narratives of nutrition in understanding food and health linkages' considers how poor diets and nutritional outcomes have become a (in our view, much needed) *cause celebre* in national, international and public debates. But we argue that these narratives – when dominant –become easily hijacked or blunted by their appeal to multiple constituencies, whilst the core responses bring parallel technological lock-ins in to those we see in agri-food. In essence, this can result in a refusal to consider and upturn broader inequities which lead to unbalanced diets and unequal nutrition outcomes in the first place. The fifth section, 'Cultures of consumption', extends this focus on the cultural politics of food and eating, complementing this review's predominantly production-focused earlier section to take fuller note of the diversity of food cultures, their associated politics and relations with questions of social difference and identity. *Food discourses* and *food contentions and movements* approaches are drawn on illustrated in this section. We finish this section by referencing literatures taking the *food socio-natures* approaches in Table 1, which entail a different set of political implications for how food system change will happen in response to emerging and intersecting socio-natural phenomena, while also respecting different and indigenous understandings of where to draw the lines between human practice, nature and food.

The sixth and final section of the article provides a synthesis across the cases, drawing together the various approaches to power and politics and showing how they might be integrated. We adopt an analytic grounded in the work of the STEPS Centre[2] (Leach, Stirling, & Scoones, 2010) which integrates plural approaches such as those addressed here in describing different *pathways* of change and intervention, raising critical questions about the overall direction and diversity of these pathways, their distributional effects, and the extent of democratic inclusion in decisions about pathways. We find this extended '4D' approach helpful in highlighting current food systems inequities and the political options for future food systems change; and conclude by considering how it might be harnessed as part of future work.

4. State power, globalization, and state-society relations in the food system

The state is conventionally seen as the locus of political power, and Agenda 2030 treats nation states as ultimately accountable for achieving the SDGs. Yet particularly since the global food crisis of 2008, this 'methodological nationalism' has been at odds with a 'heightened consciousness of the national boundary-defying causes of these crises and of the consequent need for a radically global and participatory approach for identifying solutions' (Sexsmith & McMichael, 2015, p. 582). The observable realities of the food system and its SDG priorities point to contradictory influences on the power of states within a global food system. A rising number of states in the 21st century lack the power to protect citizens even against mass starvation, as a combination of 'economic crisis, protracted armed conflict, and counter-humanitarian actions and principles' appear to have reversed decades of progress in preventing famine (de Waal, 2018). Many more governments struggled to guarantee food security during the global food price spikes of 2008 and 2010, closely linked as they were to (global processes of) financialization and climate change (Clapp & Helleiner, 2012; Lang, 2010; McMichael, 2009a). At the same time, the power of private sector interests in national food and agriculture policies and international institutions has grown, in visible multi-

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stakeholder initiatives like the New Alliance (Brooks, 2016), and the more covert concentration of multinational corporate power over key stages of the global food supply chain – agricultural inputs, processing, marketing and retail (Clapp, 2012; Howard, 2016).

How can we understand the role of states in the contemporary food system? Since the 1990s, *food regimes* approaches have provided the most robust intellectual framework and methodology for contextualizing and historicizing the global restructuring of food and agriculture (Magnan, 2012). A food regime is a 'rule-governed structure of production and consumption of food on a world scale' (Friedmann, 1993, pp. 30–31), in which food and agriculture play a strategic role at different stages of global capitalist accumulation and transformation (Friedmann & McMichael, 1989). In the first food regime from the 1870s, British imperial force and London's financial sector developed staple food trade with European settler nations to subsidize industrial wages; in the second, after World War II, US power used food system industrialization and exports to subsidize domestic consumption and international development, with food aid playing a critical role in legitimizing the expansion of US food markets (Friedmann, 1993; McMichael, 2005). The period since the end of the cold war possibly signals the emergence of a third, 'corporate food regime', in which world trade liberalization pushes through governmental or peasant resistance to enable global agri-food actors to penetrate local markets (Friedmann, 2009; McMichael, 2005).

Food regimes theory challenges the Washington Consensus model in which national economic development hinges on agrarian transition and food supply industrialization, pointing out the historically specific nature of US agriculture as the dominant (and rule-setting) actor in the post-war period, and its limitations as a model for national economic development of countries otherwise positioned (Magnan, 2012). The neoliberal model of agricultural value chain development assumes '*modern* states resolve the 'peasant question', by either 'emptying the countryside' or by incorporating small producers into supply (value) chains that essentially convert them from farmers into contract labor on the land' (Sexsmith & McMichael, 2015). The role of the state is then to 'create an enabling environment for the activities of global agri-food transnational corporations (TNCs) and the predatory markets that they require to regulate the choices of those that are subordinate within the world food system' (Akram-Lodhi, 1160, 2008). Political support for such a 'resolution' is mediated by a *comprador* domestic class of financiers and traders that benefits from national de-regulation (McMichael & Myhre, 1991, pp. 91–92).

By sticking to its state-centric model of agricultural development 'the SDG process will continue to provide inadequate tools for addressing the crises experienced by those displaced from the land' (Sexsmith & McMichael, 2015, p. 582). But how significant is the state in contemporary food systems? The tendency of food regimes thinking to write off the state as shrunken by neoliberal reforms, incapacitated by world trade rules, or captured by powerful agri-food interests has been challenged, and various approaches to *food institutions* provide a more nuanced picture. Pritchard et al. note that large Southern countries have responded to the threat of food insecurity since the global food price rises from 2007 by 'moving in' with new entitlements and protections, as the food crises brought 'the politics of food more centrally within the locus of national policy debate and action' (2016, p. 694). The role of the state may also differ depending on whether national food systems are mainly traditional, modernizing, or industrialized (and, as the section below considers, how poor rural food producers themselves respond to such transformation). While not opposed to globalization, several BRICS countries 'are pursuing a strategy of 'de-freezing' global power structures and building trade among

members . . . [among other aims] to protect farming so as to ensure access to domestic food supply in times of global food shortages', a goal arising 'from a lack of trust in the capacity of free market policies to guarantee food security' (Lawrence, 2017, p. 786).

Debates about the state 'moving in' to re-regulate national food systems reflect renewed attention to the role played by food systems in state-building and state-society relations. How modern states established stable food systems capable of extracting and marketing agrarian surpluses to feed state personnel and a growing non-farming population was crucial to their development (if not quite so foundational as taxation or war – Tilly, 1975). As commercial agriculture and food trade were growing in importance throughout 18th and early 19th century Europe, food riots routinely politicized periods of dearth, setting 'moral economy' standards on how markets should work to assure mass subsistence, and holding public authorities accountable for protecting citizens against food market failures. Handled badly by a repressive or unresponsive state, food riots could escalate into significant political unrest (Bohstedt, 2016; Rudé, 1981; Thompson, 1991; Tilly, 1975). The international waves of food riots and related unrest in 2007–08 and 2010–11 involved multiple such citizen-state struggles in low and middle-income countries around the world. Analysis of the relationships between regime type (protests more likely in cities in democracies and semi-authoritarian regimes) and price movements (protests most likely when staple prices spike) (Arezki & Bruckner, 2011; Berazneva & Lee, 2013; Hendrix & Haggard, 2015) provide an overview of the conditions under which food riots may be triggered, but are limited in their analysis of these as political events (Demarest, 2015). Examined closely, drawing on approaches to *food contentions and movements*, riots articulated both a common frustration about the crisis of subsistence created by food price spikes, and a political critique of the agri-food and political system that enabled it, fingering domestic market actors for collusion or other malpractice (Bohstedt, 2016; Bush & Martiniello, 2017; Hossain & Kalita, 2014; Patel & McMichael, 2009). Some of the 21st century food riots also amplified into wider political struggles, regime change, and even revolution (Johnstone & Mazo, 2011; Lagi, Bertrand, & Bar-Yam, 2011). In many cases, food riots 'worked' to shift political discourse and policy options for national policymakers (Hossain & Scott-Villiers, 2017); the effects were evident when many countries resorted to protectionist policies during the food crisis, against strong multilateral opposition (Abbott & Borot de Battisti, 2011; Demeke, Pangrazio, & Maetz, 2008).

While the politics of state-citizen relations draws on understandings of historical capitalist transformation, fundamentally new transnational forms of political power have emerged since the late 1980s in the form of transnational agrarian movements comprising 'organizations, networks, coalitions and solidarity linkages of farmers, peasants and their allies that cross national boundaries and that seek to influence national and global policies', helping reframe the terms of key international development debates, including environmental sustainability, land rights, global trade rules, corporate control of agricultural technology, and peasants' human rights (Borras & Edelman, 2016, p. 1). As works following *food contentions and movements* approaches underline, such collective solidarities resist the effects of the globalization, decentralization and privatization of state systems that once regulated agrarian life, and which 'have shaken rural society to its core' through loss of control over agricultural production, of livelihoods, and of land (Borras, Edelman, & Kay, 2008, p. 170). The global governance of the food system has created new transnational political opportunities for appropriately globalized forms of resistance; networks like the international peasant movement *La Via Campesina* (the 'way of the peasant') came to public attention with headline-grabbing repertoires of direct action against world trade

negotiations. Many members have older roots in left international rural solidarity networks, but transnational agrarian movements are diverse and broad-based, comprising moderate and more radical strategies (Borras, 2010; Edelman, 2003), increasingly shaped by ideologies from both the political left and the new right (Borras, 2009). The movement for 'food sovereignty', defined as 'the right of each nation to maintain and develop its own capacity to produce its basic foods respecting cultural and productive diversity … to produce our own food in our own territory' (Patel, 2009, p. 665) has been particularly prominent in reshaping debates about food security, articulating and spreading alternative agroecological models to industrialized capitalist agriculture (Holt-Giménez & Altieri, 2012). Among its achievements have been reframing and pushing for recognition of new human rights (Duncan & Claeys, 2018), framed as 'the rights of peoples to food sovereignty' and the rights of peasants (Claeys, 2012, 2015). In the wake of the global food crisis, social movements have also pushed for reforms to the UN's Committee on World Food Security (CFS), the main international intergovernmental body for the discussion and coordination of global food security policy, that introduced a civil society mechanism that drastically widened the space for social movements. But while the reformed CFS has improved democratic participation in global food policymaking, and civil society actors can point to clear gains, traditional power-holders continue to make efforts to undermine and de-politicize global food governance (Duncan & Claeys, 2018; Duncan, 2015).

5. Agri-food science and technology politics from the mid-20th century

Malthusian concerns with feeding the world's growing population have been central to many state discourses, sometimes with devastating impacts. (Davis, 2017) argues that the introduction of laissez-faire and Malthusian ideology by colonial states in the 19th century increased rural poverty and exacerbated hunger in Brazil, China, Ethiopia, India, Korea, New Caledonia, the Philippines and Vietnam. Notwithstanding this legacy, feeding hungry people is a moral imperative and a long-standing global development challenge, currently expressed in SDG2. This goal has driven innovations in agricultural science and technology (S&T) aimed at food production – often glossed as agri-food, as we do here. It has shaped the architecture of agri-food research in ways that have been particularly influential in countries of the Global South, with approaches to *food innovation systems* combined with *food institutions* proving helpful in elucidating the politics involved.

Food shortages and famines in Asia in the mid-20th century lay at the root of the green revolution, dubbed one of the most significant breakthroughs in agri-food S&T of modern times (Conway & Barbier, 1990; Hazell, 2009; Lipton & Longhurst, 1989; Pingali, 2012). This was a turning point for agri-food systems across many countries, experiencing intensification of production around high yielding crops and growing integration between production, processing and trading. The science-driven agricultural transformation in countries like India, Pakistan, China and Brazil throughout the 1960–80s resulted in unprecedented rises in yields and production, often celebrated by agronomists and economists alike (Hazell, 2009; Swaminathan, 2003).

Yet, the green revolution was not just about scientific and technological innovation to increase crop yields and expand production, as emphasized by narratives about 'grand missions of agricultural innovation' (Wright, 2012). It was also, and crucially, about Cold War geopolitics, nation-state building, and state-capital alliances of the type described by food regimes and elaborated by *food institutions* approaches. The argument about the United States' impetus to expand markets for American

businesses, while containing the spread of communism has been persuasively made (Cleaver, 1972; Cullather, 2004; Perkins, 1997). And yet Southern countries were not passive recipients of US S&T; governments, such as those of India and China, played a role in infusing foreign influence and scientific innovation with their own national priorities and values. For example, that the Indian government welcomed US scientific support did not mean that its goals and vision were the same as those held by the US; for India's newly independent state the priority was to protect the country's sovereignty and the moral legitimacy to rule vis-à-vis the British former colonial power (Saha & Schmalzer, 2016).

Class politics were also at the core of the green revolution. The reproduction of unequal patterns of accumulation have been a constant feature of the green revolution over its 'longue durée', since the earlier alliances between bureaucrats, elite scientists and affluent farmers to the later stage of corporate dominance (Patel, 2013a). In India, the transition from the green revolution early days of plant-breeding in the 1960s and 70s into the biotechnology era, since the late 1990s, was marked by a growing role of private transnational corporations in funding research and by the centrality of global markets, rather than national food self-sufficiency or nation building, in driving science and shaping policy (Seshia & Scoones, 2003).

Capturing these different dimensions of green revolution politics – geopolitics, state and corporate power, and class dynamics – calls for an approach that looks at innovations and institutions across multiple scales – the global, the national, and in relation to social (class) identities. Yet while these approaches help reveal the material politics in play - winners and losers of prioritized technologies across different scales – we also need to attend to knowledge politics, and the dynamics of power that determine what (and whose) ideas and technological solutions prevail. *Food discourse* approaches are helpful here. As we will now discuss, the ecological critique to the green revolution helped make the case that yields and productive efficiency were not all that mattered in agri-food technology; biodiversity loss and resource scarcity mattered too. And perspectives on local and indigenous thought have shed light onto marginalized world views and alternative trajectories. Combined, these intellectual contributions have paved the way for an epistemological critique to emerge that questioned the inexorable modernity embodied by the green revolution, pointing also towards political ecology arguments about how the social and natural are co-constituted (Moragues-Faus & Marsden, 2017) which we consider in more detail in a later section.

Despite the global hype accorded to the green revolution in the late 1960s and 1970s[3], the environmental and social costs of the rapid expansion and intensification of farming activity soon began to emerge. The spread of chemicals that accompanied green revolution high yielding varieties had a harmful impact on the environment and health (Hasan, 2015; Pimentel, 1996), as Rachel Carson's 1962 influential *Silent Spring* (Carson, 2000) had anticipated. Also, green revolution technological solutions were not scale neutral but benefited social groups and locations unevenly (Beck, 1995; Niazi, 2004). They also locked farmers into a pathway that made them dependent on certain inputs, many becoming hopelessly indebted (Shiva, 2000, 2016). Against this legacy, technology could no longer be regarded separately from environmental and societal concerns. Calls for a 'doubly green revolution' (Conway, 1998) and an 'ever-green revolution' (Visvanathan, 2003) reflected the influence of these concerns, even if overlooking class politics and maintaining a degree of 'technological determinism' whereby technology is

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[3] For example, in 1970, Norman Borlaug, a leading US plant breeder in the Green Revolution was awarded the Nobel Peace Prize.

regarded as an autonomous, apolitical and virtuous agent of change (Smith & Marx, 1994).

Environmental perspectives gained impetus throughout the late 1980s and 90s, and an environmental sustainability discourse gradually permeated S&T. Some notable innovations emerged to address concerns with soil erosion, water erosion, vulnerability to increasingly erratic weather and aggressive pests and, later, carbon emissions. Examples include zero tillage, integrated pest management, the System of Rice Intensification, agro-forestry systems and, more recently, many other innovations labelled as 'climate-smart' (FAO, 2013). Yet, the greening of S&T has not been driven only by genuine preoccupations with non-human nature and sustainability, but has also been shaped by a narrow set of institutional interests, including those of large corporations (as in Monsanto's advocacy for no-tillage practices[4]), the aid industry and the global research system. For example, Newell and Taylor (2018, p. 123) find that actors in the agri-food system seek advantages by 'levering the high-profile attention that the relationship between climate change and agriculture is attracting, such that actors like the CGIAR seek to remedy their recent funding decreases through involvement in high-profile initiatives around [climate smart agriculture]'.

Despite some progress on the environmental front (at the discursive level at least), an agenda concerned with the distributional impact of technological innovation lagged behind intellectual thinking. The 'appropriate technology' debate in the late 1980s (Segal, 1992; Stewart, 1987) had drawn attention to the issue of scale in devising suitable (small, labor-intensive and low skill-using) solutions for farmers who needed support the most. Some years later, the notion of 'transformative innovation' built on these concerns while adding an emphasis on agency from below (Leach et al., 2012). Smith and Stirling (2018) discuss ways in which local grassroots innovation can contribute to (social and environmental) sustainability, including by empowering technological configurations that mainstream innovation systems suppress, and by fostering diversity that is crucial for building resilience (Leach et al., 2012). Yet, dominant narrow interests have compromised the pursuit of transformative innovation; S&T are after all instrumental to corporate consolidation in the globalized food regime (McMichael, 2009b). Deep-rooted top-down biases in development policy and practice and an ivory tower mindset in agricultural research have also stood in the way of more equitable, poor people-centered S&T (Chambers, 2017).

Debates on agri-food S&T have become globally polarized, reflecting the deepening concentration of agri-food systems (McMahon, 2014; Patel, 2013a); this has been a further dynamic in the transationalization of societal mobilization and activism for justice discussed in the previous section (Borras et al., 2008; Hossain & Scott-Villiers, 2017). 'Food wars' (Lang, 2015) erupted between two opposing meta paradigms—one celebrating science and the benefits of biotechnology for the environment, health and nutrition; the other emphasizing the preservation of ecological diversity and advocating for a balanced interaction between humans and ecosystems. These divisions have manifested more visibly in battles between corporations and agrarian and environmental movements, as in the case of GMOs (Pellegrini, 2009). But fractures have also emerged within conventional agricultural science, turning it into a deeply contested field (Sumberg, Thompson, & Woodhouse, 2013).

Notwithstanding the vigor of the intellectual dispute and activism, the playing field of agri-food S&T is not level and the distribution of power – institutional and discursive – in the agri-food system influences which technological solutions come to domi-

nate. While preoccupations with yields and narrowly-defined efficiency and value continue to prevail, the complex interactions between nature and people in agri-food systems continue to be overlooked, as argued by political ecologists (Goldman, Nadasdy, & Turner, 2011). And, as agroecologists have noted, agrarian social actors and movements, with different kinds of knowledge and ways of knowing, remain at the margins of S&T systems (Pimbert, 2017; Rosset & Altieri, 2017). Structural and epistemological divides in knowledge production stand in the way of truly transformative agri-food system changes towards sustainability. The initiative for Globally Important Agricultural Heritage Systems (FAO 2019), which frames agri-food systems beyond a functionalist perspective to account for human, cultural, territorial and aesthetic values in food, may be a step in the right direction, provided it fulfils its promise to safeguard and harness agri-food systems where human communities and biophysical landscapes coexist in harmony. This requires an opening of institutional arrangements so that a more plural set of interests and perspectives can influence agri-food S&T.

Recently, the growing international assertiveness of China and other Southern powers have increased competitiveness in global development and in agri-food technological exchanges in the global South (Mawdsley, 2012; Scoones, Amanor, Favareto, & Qi, 2016). It is not guaranteed, however, that this will result in more plural and diverse innovation systems. Driven by diplomacy and business, these countries' technology transfers have thus far been largely confined to a narrow range of solutions (e.g. China's hybrid rice, Brazil's agribusiness clusters, India's farming machinery) that replicate established food regimes and institutional interests with the same technological determinism. This not only disregards the wealth and diversity of these countries' domestic experiences (da Silva & Begossi, 2009; Singh, Pretty, & Pilgrim, 2010), but it also reinforces a linear top-down transfer ethos that is at odds with these countries' high-level counter-hegemonic political stances. Yet, China's recent commitment to sustainability (Neuweg & Stern, 2019) has meant a shift of focus in agri-food technology from yields to concerns about ecological preservation, rural revitalization and food quality (Office of the State Council, 2017). This shift may turn attention to China's lesser-known bottom-up experiences with rural and social regeneration that combine agroecological transition with the preservation of cultural traditions, while changing conservative social norms (Hairong, 2018).

6. Rural livelihoods, agri-food systems and inclusive structural transformation

The experience of agricultural development and rural transformation in Brazil, China and India has been echoed elsewhere in Latin America and South and South-East Asia and has highlighted not only how there are multiple pathways towards rural development and agrarian change, but also how agriculture-led growth remains an important part of the success of emerging economies in tackling poverty and hunger, particularly if it can be made more 'pro-poor' (Valdés & Foster, 2010). Thus, while we might eschew the Malthusian narratives wrapped up in the rhetoric of the green revolution, this is not to embrace the *laissez-faire* argument that says that structural transformation of poor rural areas will happen by itself or necessarily lead to more positive outcomes for poor and marginal populations. Such views reflect the politics of both the right and the left in either reifying dominant 'productivist' or 'growth' narratives, or romanticizing the 'peasantry' and various forms of subsistence or 'low-input' agriculture (Thompson & Scoones, 2009).

Most of the world's food insecure people live in countries which have yet to make the necessary headway towards the structural

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[4] Evidence suggests that zero tillage is associated with an increased use of herbicides (Friedrich and Kassam 2012). Monsanto's flagship product is Roundup, a glyphosate-based herbicide first introduced in the early 1970s.

transformation of their economies. As *food institutions* approaches emphasise, institutional and political factors that increase social exclusion or adverse incorporation may limit possibilities, keeping poor people poor and vulnerable. Political interests and incumbent powers contribute to 'lock-ins' as emphasized by *food innovation systems* approaches, to exacerbate the negative and limit opportunities for positive action that can lead to fundamental transformation of both food and associated livelihood systems (Béné et al., 2019). This is why transformative intervention may be needed to unlock the potential for shifting such structural constraints, such as social protection measures focused on asset transfers, including land redistribution (Devereux & Sabates-Wheeler, 2004). Thus, making progress towards the SDG targets to enhance food systems and improve livelihoods will depend on transforming rural areas.

This progress will depend on more inclusive political and policy processes to do with agricultural policy and rural change than has happened to date (Gupta & Pouw, 2017). Notably, the critical counter-narratives to dominant forms of agricultural policy and R&D examined above have questioned the mainstream focus on food production as both means and an end to problems within the food system. But such critiques cannot also ignore the fact that historically, successful structural transformations in many countries were driven by agricultural productivity gains, leading to a shift of livelihood strategies and resources away from agriculture towards manufacturing, industry and services, large increases in per capita income, and steep reductions in poverty and hunger (IFAD, 2016; 2017). However, in countries with continued low levels of GDP per capita, agriculture's share remains large and the proportion of the working population employed in agriculture is even larger due to low labor productivity. For example, Sub-Saharan Africa's poverty and hunger are closely bound up with continuing low agricultural productivity and the nature of the region's structural changes (Badiane, 2014; 2017). An estimated 82% of the region's poor people continue to reside in rural areas (Beegle, Christiaensen, Dabalen, & Gaddis, 2016) and nearly 70% of rural households in a sample of nine African countries earned the bulk of their income from agriculture (Davis, Di Giuseppe, & Zezza, 2014). The sheer magnitude of these numbers makes what happens in the food system particularly important for poverty reduction and rural livelihoods.

Many scholars and policy analysts acknowledge that there is little evidence to suggest that most African countries can bypass a broad-based agricultural revolution successfully to launch their structural transformations, whether led by smallholders or not (Diao, Hazell, & Thurlow, 2010; Dorosh & Thurlow, 2018). Recently, several leading international research and development agencies, including the International Food Policy Research Institute (IFPRI), the FAO and IFAD, have advocated a strategy for leveraging what they see as the enormous 'untapped potential' of food systems to drive agro-industrial development and boost productivity and incomes in Africa and elsewhere. They envisage a place for both small and medium-scale producers in this landscape. They claim that promoting more 'inclusive food systems' (Béné et al., 2019; Blay-Palmer, Sonnino, & Custot, 2016; IFPRI, 2020) or 'inclusive rural transformation' – a process in which rising agricultural productivity, increasing marketable surpluses, expanded off-farm employment opportunities, better access to services and infrastructure, and capacity to influence policy all lead to improved rural livelihoods and inclusive growth – would contribute significantly to the eradication of rural poverty, while at the same time helping end poverty and malnutrition in urban areas (FAO et al., 2019; FAO, 2017; Habiyaremye, Kruss, & Booyens, 2019; IFAD, 2016, 2019).

However, it makes no sense to talk of small and medium-scale farmers *en masse* as there is considerable diversity among rural producers which must be understood to avoid 'one size fits all' approaches and make this truly inclusive. Livelihoods analysis that

identifies different future strategies or pathways, and the institutional processes shaping people's decisions and options, provides one way of thinking about longer-term change in relation to rural realities and the wider drivers of agricultural policy and politics that affect the needs of the many dependent on the food system for both food and livelihoods, as producers and consumers. For example, Dorward et al. (2009) distinguish between different livelihood strategies, notably *'Hanging In', 'Stepping Up'* and *'Stepping Out'*. Given current trends, different people, because of their current asset base and livelihood options, are likely to end up just coping, intensifying and even expanding their agricultural activities, moving to new livelihood options, or getting out of agriculture completely. Research by the IDS-led Future Agricultures Consortium (Thompson, Forthcoming) have added two additional pathways to this framework – *'Moving Out'* and *'Stepping In'* – to highlight the following typology of social processes found in African agricultural contexts:

1. *'Moving Out'* – where households move out of productive agricultural activities either due to some 'push' factor (an economic, social or environmental shock or stress – e.g. displacement, illness or death of a family member) or 'pull' factor (an alternative livelihood opportunity – e.g. urban employment, out-migration);
2. *'Hanging-In'* – where activities are undertaken to maintain livelihood levels at a 'survival' level and where most households are net consumers not net producers;
3. *'Stepping-Up'* – where investments are made in existing activities to increase their returns and efforts are made to intensify their production through investment in technology, land and/or labor, specialize in particular commodities, and engage in market-based activities;
4. *'Stepping Out'* – where existing activities are engaged in the accumulation of assets as a means of investing in alternative, higher-return, off-farm livelihood activities as the primary source of their income (e.g. value-added agro-processing and trading, rural transport, small businesses in urban centers).
5. *'Stepping In'* – where urban-based, often medium-scale, 'investor farmers' come into the countryside to acquire land for commercial agricultural activities, bringing new technology, investments and market linkages with them, thus driving innovation, on the one hand, and social differentiation, on the other (Muyanga et al., 2019).

This conceptualization puts dynamic aspirations and change (including intra-household and intergenerational relations) at the core of understanding livelihoods and development. In emphasizing the interaction of politics and these livelihood processes, it should be noted that different people's options are channeled down particular pathways, reinforced by particular policy processes, institutional pressures and external support (Scoones, 2015). These factors shape their room to maneuver and their ability to switch from less to more livelihood-enhancing pathways.

It is important to stress here that multiple livelihood strategies and trajectories may exist at the same time in the same places and create an agrarian dynamic that has a broader effect on social relations, politics and the rural economy. As accumulation occurs among some individuals and farming households, so too does social and economic differentiation, creating both 'winners' and 'losers' (Cousins, 2010, 2013).

This pattern of social differentiation may vary depending on people's 'capitals and capabilities' – i.e. the ways in which they: (i) combine and transform different assets in the building of livelihoods that as far as possible meet their material and their experiential needs; (ii) expand their asset bases through engaging with other actors through relationships governed by the logics of the

state, market and civil society; and (iii) deploy and enhance their capabilities both to make living more meaningful and to change the dominant rules and relationships governing the ways in which resources are controlled, distributed and transformed in society (Bebbington, 1999). The ability to access and make use of these capitals and capabilities is further mediated not only along the axis of social class, but also of gender, age, and ethnicity. Each of these dimensions of difference intersect, influencing livelihood change over time. Indeed, it is only with this longitudinal perspective, rooted in an analysis of agrarian dynamics (Bernstein, Friedmann, van der Ploeg, Shanin, & White, 2018; Borras, 2009), that longer term trajectories of livelihoods can be understood. For livelihoods are not isolated and independent, but tied to broader processes of economic, political, social and technological change. A wider political economy of institutions approach is therefore essential to any effective analysis of rural livelihoods and structural transformation.

Key processes of structural change (and also of stasis) involve multiple interactions between these livelihood pathways, and a variety of exchanges and flows (with the state, with the market, and with other rural and urban based actors) (Dorosh & Thurlow, 2018; Poulton, 2017). In this regard, it is helpful to consider the way that agriculture can play two potential roles in wider processes of structural transformation, driving economic growth (by providing fundamental increases in productivity and earnings) and supporting those processes in terms of spreading the benefits of primary growth multipliers through an economy. The opportunities for and demands from agriculture in supporting these changes vary between and within countries, depending on agro-ecological, market and other conditions. However, some commentators have questioned whether even a rural transformation agenda of increasing modernization, marketization and rural exit alone will have the widespread effects that many governments and some scholars anticipate. They argue that a narrow focus on improving agriculture and food systems can obscure how rural livelihoods also embody acts of consumption, care, reproduction and redistribution (Rigg, Salamanca, Phongsiri, & Sripun, 2018). The current experience of many rural households – particularly those living in risk-prone environments where livelihoods comprise a nexus of activities, both on-farm and off-farm, *in situ* and *ex situ*, commoditized and care focused, and reproductive and redistributive – is far more complex. These precarious livelihoods will likely also persist if non-farm occupations remain classically insecure and social protection measures are limited (Devereux & Sabates-Wheeler, 2004).

These systemic changes in rural economies and food systems, combined with the historical constraints discussed earlier, can erode livelihood security for some poor and marginalized rural people. Small-scale family agriculture is and will remain vitally important for these households. Of the roughly 570 million farms that exist worldwide, an estimated 83% are in Asia (74%) and Sub-Saharan Africa (9%) and 475 million are smallholder farms of less than two hectares (Lowder, Skoet, & Raney, 2016). These farms operate about 12% of the world's total agricultural land and yet produce more than 70% of the food calories to people living in those regions. They also provide some of the major commodities consumed globally (Lowder et al., 2016). Yet many of these farmers are poor and caught in low productivity/poverty traps (Dorosh & Thurlow, 2018). They lack the necessary human, social, political, and financial capitals and capabilities to support broad-based rural development and transformation. As agriculture-based livelihoods come under increasing pressure rural poverty can increase and out-migration – the *'Moving Out'* trajectory – is often seen, particularly among young people, as the only option (De Schutter, 2017; FAO et al., 2019).

Escaping these poverty traps is particularly difficult given the institutional and social constraints bound up in gendered relations

of production and reproduction, labor markets, and public systems. In the context of exiting agriculture, it is often men who migrate from rural areas in times of difficulty, with women left behind to labor on increasingly unproductive land, while also retaining responsibilities for household and family welfare (Beegle et al., 2016; Kabeer, 2011). These consequences are particularly negative for women because the structures of constraint can limit their bargaining power (Agarwal, 1997; Bryceson, 2002), making it difficult for them to access land, water, inputs, technical knowledge and markets and adapt to changing environmental and economic conditions (FAO, 2018).

Yet, while there is widespread agreement that women are relatively disadvantaged compared with men (Johnson, Kovarik, Meinzen-Dick, Njuki, & Quisumbing, 2016), problems of social disadvantage are often not analyzed or addressed in the context of these changing social relations and structural trends. Longstanding literatures on gender and rural institutions highlight the range of relations between men and women, ranging from violence to co-operation, 'jointness' and negotiation (Berry, 1993; Doss, Meinzen-Dick, Quisumbing, & Theis, 2018, p. 73; Guyer, 1995; Whitehead, 2002). Yet much mainstream food and development discourse continues to adhere to preconceived 'myths' which fail to recognize variation between and within groups of women, or women's strengths as well as their limitations.

7. Narratives of nutrition in understanding food and health linkages

Nutrition academics and activists have long noted that green revolution perspectives, and indeed much work on agricultural production and livelihoods, speak to addressing food insecurity and hunger, but not to broader issues of malnutrition. Malnutrition includes forms of chronic and acute food deprivation and micronutrient deficiencies which lead to poor growth and immunity, as well as the food-related conditions of overweight and obesity and related non-communicable diseases such as diabetes. Dietary factors behind these conditions go far beyond gaining a sufficient quantity of calories, and such factors are underpinned by food systems that do not make equally available or accessible diverse foods beyond staple grains. The need to push back against the monolithic hunger narrative that created the green revolution has by necessity created a cadre of nutritionists who have defined work on limiting hunger as different from work on limiting malnutrition. In the process however, debate in the nutrition world has moved away from the political conversations pervading work on hunger, and into largely technocratic discussions around how to produce, procure or deliver nutrients – an approach of 'nutritionism' or 'hegemonic nutrition' (Hayes-Conroy & Hayes-Conroy, 2013; Scrinis, 2008).

A resultant 'hunger vs nutrition' polarization has led to unhelpful disregard of integrated and holistic conceptions of nutrition, as well as divergence away from political approaches to addressing these. One way to understand how these processes have shaped nutrition policy and practice is through a *food discourse* approach, highlighting how power relations shape what is said and how issues are understood.

Just as the hunger, food security and agri-food world contains both mainstream approaches and more radical dialogue (reviewed in other sections of this paper), the international nutrition world too has been characterised as split among many competing and non-prioritised narratives, or storylines (Béné et al., 2019; Kimura, 2013; Morris, Cogill, & Uauy, 2008). Much international nutrition research and practice is focused on technical approaches and is largely self-referential, not looking to incorporate knowledge beyond epidemiological, economic and governance work on particular nutrition outcomes. Some researchers have addressed

issues of equity (Meinzen-Dick, Behrman, Menon, & Quisumbing, 2012; Van den Bold, Quisumbing, & Gillespie, 2013), but have generally not drawn on broader and more established social science theory (Harris & Nisbett, 2018) including now long-established and critical literatures within disciplines such as anthropology and geography (see Table 1). Similarly, nutrition policy process work has started to address issues of power and ideas (Harris, 2019a, 2019b) and deeper structural issues (Nisbett, 2019), whilst there are marginalised workstreams on social and rights-based approaches to addressing malnutrition largely from the 1990s (Barth-Eide, Kracht, & Robertson, 1996; Fanzo, Cordes, Fox, & Bulman, 2019), but beyond these examples much work in nutrition remains largely technical rather than explicitly political.

Strategic synthesis by nutrition academics in the middle of the last decade attempted to remedy this fragmentation by marshalling selective evidence and constructing narratives they suggested the community could coalesce behind, culminating in 2008 in a special issue of *The Lancet* journal funded by the Bill and Melinda Gates Foundation (Lancet, 2008). This work promoted the idea of child stunting – low height for a child's age – as a key development metric because of its association with poor health and economic productivity in later life, and suggested that addressing stunting in the first 1000 days of life should be a priority area for multiple different sectors from health to agriculture to education. Child stunting has for the past decade been the major direction for development work under the SDGs and related funding and programme cycles, therefore, and has swamped many other nutrition narratives.

This clearer narrative has indeed allowed nutrition to move up development agendas, aided by private sector interest in providing the technologies required for the more technical supplementation and fortification interventions into nutrition (Kimura, 2013). The 'stunting in the 1000 days' narrative has been successful in part because different sectors could see their role in stunting reduction while maintaining business as usual in their actions; the actions needed to address stunting are ambiguous enough that numerous actors can see their roles with little change to their technical mandates and activities (Harris, 2019c). From a political perspective, there is benefit in the fact that stunting – as a difficult indicator to shift without broader societal transformation and improvements in public services more generally – can focus the narrative on broader causes of underdevelopment. But in most cases the stunting narrative has not engaged with the social and political issues that drive marginalization and malnutrition at more fundamental levels – which nutritionists term the 'basic causes' of nutrition and relegate to a black box of 'context' in most research and action (Harris & Nisbett, 2019a; Nisbett, Gillespie, Haddad, & Harris, 2014).

A turning point is being reached as we write, however. Slow progress on reducing malnutrition and a spotlight on slower reductions in the most marginalised groups has allowed discussion of broader equity issues back into the conversation, with rights, power, equity and ethics coming to the fore, and a reinvigoration of the field of critical and social nutrition via a partial (re-) integration with more critical works in other academic disciplines (Harris, Nisbett, & Baker, 2020; Jaspars, Scott-Smith, & Hull, 2018). At the same time, a coming together of undernutrition work with obesity research and policy – which pays greater attention to global power disparities in the food system and clashes between global health advocates and the multinational food industry – has brought conversations back around to more political determinants (Friel & Ford, 2015). These have brought nutrition full-circle, and back into broader food dialogues, both mainstream and alternative. The danger is of course that these issues are in turn co-opted, and nutrition once more becomes marginalised within food debates, or issues of rights and equity again marginalised within nutrition.

The way the issue of food system inadequacy is framed – through particular discourses – determines the policies and interventions favoured to remedy the situation (Béné et al., 2019). If the problem is feeding a growing population, the solution will be increasing yields; if the problem is a lack of micronutrients, the problem can be technical supplementation and fortification fixes advocated under 'nutritionism', and if the problem is delivering a healthy diet, the solution will be diversifying available, accessible and desirable foods. The perspective of many involved in nutrition work is now evolving to understand that diverse diets are where food meets health, and are where multi-sectoral work on nutrition finds the overlap between the food and agriculture sector and sectors dealing with health and social care. But this newer focus on diet as a food system outcome, and on issues of power and marginalization driving change or inertia, are not reflected in the SDGs. SDG2 for instance perpetuates the old dichotomy through targets on hunger, food insecurity, agricultural productivity, R&D, and trade and investment; separate to child malnutrition targets; with no targets on diets or food systems more broadly.

International nutrition is a relatively new field of research – at least in relation to its more established policy cousins, agriculture and health – so dominant narratives are changing fast, as new evidence and the relative political power of different proponents jostle for position. From a food perspective, a diets narrative is replacing a stunting narrative, which in turn replaced a hunger narrative – but the entire community is not making these changes in unison, leaving remnants of older narratives fighting with newer. The need for a joined-up approach particularly to the basic social and political determinants of malnutrition in all its forms is increasingly clear. This is why nutrition needs to be explicitly integrated into wider food politics analysis as discussed in this paper, to keep these issues on the agenda.

8. Cultures of consumption

The politics of food consumption and eating are not reducible to contestations over nutrients and dietary recommendations, or even to material political economy, but are intimately entwined with questions of meaning, values, beliefs, and identity – what might broadly be termed 'food cultures'. That food systems have important cultural dimensions is an everyday truism, explored and elaborated in depth in longstanding, large and diverse literatures on the anthropology and sociology of food and eating (Goody, 1982; Messer, 1984; Mintz & Du Bois, 2002; Phillips, 2006; Pottier, 1999; Richards, 1939). Drawing on approaches to *food discourses, food contentions and movements,* and then *food socio-natures,* this section illustrates diverse political dimensions of the problematique of who eats what and why.

Much work has been dominated by concerns with the globalization and industrialization/corporatization of food systems, identifying how dominant pathways displace local food cultures or assimilate them into corporate food regimes (McMichael & Friedmann, 2007). Such works conceptualise power largely in terms of structural political economy or the interests of corporate players, but also draw on post structuralist perspectives on discourse. They argue, for instance, that global corporations, 'supermarket culture' and media present a standardized and universalized picture of what is delicious, healthy, and trendy, establishing globally recognized brand names (e.g. Coca Cola, McDonald's, etc.) as familiar and desirable, while pushing their availability – a form of food cultural imperialism (Ritzer, 1993). This reduces the diversity of food cultures and obscures the provenance of food, resulting in 'food from nowhere' (McMichael, 2009b), with distributional consequences – marginalizing alterna-

tive food cultures and the livelihoods and statuses bound up with them (Belasco, 1987).

These works further point to the ways in which both colonial legacies, and agro-industrial and or neoliberal food regimes can work to narrow down, progressively, the food pathways available to certain groups of people as they come under the political domination of others. Important work explores how colonialism has shaped food culture/identities – including such practices as mass consumption of meat (Trigg, 2004) or broader indigenous health and food cultures (Iacovetta, Korinek, & Epp, 2012).

If globalization or 'supermarketization' is the major force shaping food cultures, there are numerous works documenting resistance to such assimilation in terms of struggles for the survival of local food cultures. Such struggles are often bound up with broader assertions of food sovereignty, the importance of local tradition and knowledge, or the autonomy and rights of indigenous or otherwise marginalised people (Borras et al., 2008; Edelman, 2003; Patel, 2009), as approaches to *food contentions and movements* highlight. Whereas early work might have reproduced views of culture which are static and a-political, and views of politics which are binary, pitting one culture against another (or local vs. global, traditional vs. modern), more recent work, informed by these approaches, emphasises the significance of people's own agency in enacting and shaping cultural practices, as well as the politics of knowledge and of representation in delineating cultural boundaries.

Thus, studies reveal what might appear as different 'food cultures' interacting through far more diverse, politicised and hybridised forms, as in the varied reactions to McDonald's of consumers in five different Asian societies (Watson, 1997), or the reverse assimilation implied by Miller's (1998) study of 'coca cola: a sweet black drink from Trinidad', exploring the interplay between the interests and practices of businesses, youth and other consumers in the country's sweet drink industry. In such examples of hybridization and appropriation, western foods are not always the reference point; thus Tuchman and Levine (1993) explore the interpretation and consumption of Chinese food by Jewish groups in the US, shaping the identities of both groups.

Work taking such approaches also anticipates more recent new-materialist or actor network theory- inspired perspectives, accommodated within our broad conception of *food discourses* (and, to some extent, *food socio-natures*), in showing how food commodities, like others, have social lives (Appadurai, 1986) and cannot be understood outside the networks of meaning and power in which they circulate (Phillips, 2006). From Mintz' classic work on sugar (1985) to Chalfin (2004) exploration of shea butter in West Africa, and the key roles played by a multiplicity of gendered actors in Ghana's domestic markets in its transformation from pre-industrial to post-industrial, globalised commodity, these works challenge the idea of the globalization of food cultures as a hegemonic, or singular process, rather emphasising the multiple and contingent relations embedded in the ways food assembles multiple relations between people, practices, materials, ideologies and cultural values (Goodman, 2015; Nisbett, 2019).

Studies also show food and eating enwrapped with the politics of nation-building, class, caste and identity, where 'like any other culturally-defined material substance, food serves both to solidify group membership and to set groups apart' (Mintz & Du Bois, 2002). Thus Mayer delineates how changing caste relations are reflected in Indian village foodways (Mayer, 1996). Goldfrank (2005) relates the success of the fresh fruit trade in Chile to the cultural and class-based status associated with healthy eating. In Ghana, eating imported chicken available in fast-food restaurants has become associated with modern, urban, youthful and moneyed lifestyles, contrasting with the rural backwardness implied by elders' consumption of backyard poultry (Sumberg, Awo, &

Kwadzo, 2017) Watson and Caldwell wonder whether 'attitudes towards fast food [have] become a global diagnostic of class?' (2005, p. 3).

But class intersects with other disparities and as feminist, anti-racist and decolonial analyses show, the relations of gendered and racialised bodies, identities and subjectivities are shaped by eating too (Counihan & Kaplan, 1998; Hayes-Conroy & Hayes-Conroy, 2013). Much of this work has focused on the link between diets and representation, such as in the associations between meat-eating and masculinity, thinness and western ideals of femininity or food and essentialised views of ethnicity fuelled by social interactions and media imagery in many settings (Greenebaum & Dexter, 2018; Mycek, 2018; Sumpter, 2015). A less explored, but potent area relates eating to cooking, and its gender and identity politics. So for example the replacement of home-cooked meals with food from snack and fast-food outlets can be a response to the time poverty of women juggling paid and unpaid care work, in the absence of gender redistribution of such caring roles (Chopra & Zambelli, 2017). In many settings historically and across the world, women have used the very foods they prepare and the ways they prepare them to resist and redefine gender roles (Inness, 2001). Dominant gender stereotypes are often challenged and reversed in 'foodie' cultures where men lead intricate, high status cooking and food preparation and are more often 'celebrity chefs' – yet this usually requires high levels of resources (Cairns, Johnston, & Baumann, 2010).

Such works highlight, at different levels, how what may be interpreted as cultural preferences or cultural identity are actually shaped by power, including the micro-political economy of gender and class within households and communities, and discursive politics of media and social media representation which often delegitimize or repackage diverse cultural perspectives. Similarly the politics of scientific knowledge can work to lock down assumptions on appropriate points of intervention or even the direction of causality between low income, gender, ethnicity and poor health (Guthman, 2013) which are then simply re-presented in popular terms. So we learn that 'poor people are fat – this makes them ill and costs the state money', rather than 'poor people who are obese and unwell face intersecting forms of discrimination which make them poorer'.

There has been a resulting surge in newly critical standpoints on the hegemonic narratives of nutrition examined in the last section. Such work provides further caveats to celebrating the diversity and resilience of multiple food cultures and helps ground issues of equity and political economy into the way we understand, on the one hand the seemingly incontestable certainty of national, expert-led and evidence-based dietary prescriptions (Biltekoff, Mudry, Kimura, Landecker, & Guthman, 2014), and on the other hand the morass of opinions and subjectivities embedded in popular food debate and dietary fads. How achievable are nationwide dietary recommendations that codify assumptions that malnutrition will be best addressed by individuals learning to weigh every plate on its nutrient value, rather than addressing factors of social and environmental justice ranging from poor housing, to wage equality, to pollution and contamination of food supply (Friel, Hattersley, Ford, & O'Rourke, 2015; Guthman, 2013)? To complicate the morality of dieting – a morality that has always been defined by the boundary policing of the higher classes (Biltekoff et al., 2014) and then proselytized with missionary zeal (Kimura, Biltekoff, Mudry, & Hayes-Conroy, 2014) – dietary prescriptions now include environmental considerations defined yet again by a Western scientific elite, which amplify moves towards particular food pathways with important cultural dimensions (Willett et al., 2019).

While it is critical to bring food systems into the broader discussion on sustainability, we need an accompanying understanding of

how such cultural dimensions are locally debated, and interplay with issues of identity and equity as locally experienced, including whether such diets are simply blind to the realities of everyday food precarity facing many of the world's more marginalized people. Such mainstream ecological understandings would also do well to draw on indigenous and other emerging thought and practice we classify in Table 1 as *food socio-natures*. These perspectives work to decentre the role of human agency in understanding the always-intertwined interaction of human and natural phenomena, questioning the Descartian tendencies that tend us to separate the social and the natural in both thought and disciplinary practice (Braun & Castree, 2001; Cassidy, 2012). Food and eating practices are thus embedded in and shaped by multi-species assemblages of interacting humans, plants and animals (Haraway, 2016), often specific to peoples and places.

For example, in West Africa's Upper Guinean Forest region, the growing, processing, cooking, eating and waste disposal from horticultural crops is intimately bound up with gender-specific interrelationships with soil, plant and insect processes involved in the creation and use of anthropogenic black soils and forest islands – which villagers themselves understand as socio-natural phenomena (Fraser, Leach, & Fairhead, 2014; Frausin et al., 2014). For some Amazonian peoples, animals, plants, and spirits are all conceived as persons, with agency and intentionality – ontologies that infuse hunting, shamanism, and many everyday food-related practices (De Castro, 2015; Kohn, 2015). In societies in the global North, Alkon (2013) shows how local organic food consumption practices draw on socio-natural ideas and experiences; while in urban political ecology there has been a wider focus on the socio-natural urban metabolic processes underpinning urban hunger (Heynen, 2006) and urban food production (Shillington, 2013). Deeper attention to *food socio-natures* - including in complex urban systems - offers insight into ideas and practices that could underpin more equitable and sustainable food systems, based on the promotion of caring, mutually respectful social-ecological interactions.

This can also provoke an extended critique of industrial, globalised consumption and production practices grounded in separation of human and non-human natures, and the exploitation and transformation of the latter into heavily financialised flows of goods and capital (Braun, 2005; Gandy, 2004; Heynen, 2006; Shillington, 2013). Instances where more interconnected food socio-natures unite and mobilise groups in the face of challenge – whether around organic food (Alkon, 2013) or food sovereignty (Wittman, 2009) highlight the potential for food socio-natures to become politicised, and the insights to be drawn from combining *food socio-natures* approaches with approaches to *food contentions and movements*. Internal and external critiques of western alternative food movements as white and privileged (Cadieux & Slocum, 2015; Slocum, 2007) also marry well with other strands of critical socio-natural and 'post-human' thinking. Together, these join with feminist, anti-colonial and anti-racist schools to further question models of (liberal, western, male, hegemonic) humanist thinking that have led, full pelt, to the current states of global food system crises of unsustainability and inequity. Such approaches demand a new and pluralist way of thinking – to which we turn in our concluding section.

9. Food politics analysis for transformation: Towards a synthesis

In synthesising across these sections we note that our chosen problematiques have followed, necessarily, a limited selection of themes, historical periods, and contexts. There are many other topics we could have chosen, focusing on different dimensions of the food system as depicted in Figure 1, and which would benefit from the kind of political analysis we have illustrated here. These include food trade and prices; labour relations; ethical consumerism; the retail sector; food aid and humanitarianism; and a variety of topics linking food with diverse climate and environmental issues. These are potential topics for future work, informed we hope by the kinds of approaches to food politics we listed in Table 1 and subsequently explored and demonstrated in this review.

Our focus has also been largely been on agri-food politics and food and development issues in the Global South, and within this we have leaned towards broader national and international politics, narratives and technological directions. But the same food systems touch us all. This leads to some paradoxical conclusions: there is a growing global convergence of dietary transition and disease experiences at a national level; but the individual, embodied experience of those food systems is occurring in gendered, racialized and otherwise inequitable ways. While we emphasise the mutual intertwining of these various food relationships and systems we also note that we have focused less on the politics of food and consumption in situations in Northern countries, as a 'universal development' approach would emphasise. Consumers in these countries are at the ends of food systems which have deep roots globally but which also serve people and the planet in ways that are shamefully inequitable and far from sustainable. With regard to European and US settings not fully explored here, there are literatures on these inequities and on ethical consumption (Alkon, 2008), trade policy and agricultural subsidies (Clapp, 2004, 2015), alternative food networks (Goodman, DuPuis, & Goodman, 2012), food justice and labour relations (Cadieux & Slocum, 2015), alongside a growing literature on the concentration of influences on production and consumption amongst fewer, large firms (IPES-Food. , 2017).

We have used the various sections to illustrate different approaches to understanding food politics which in turn are grounded in different theoretical traditions and conceptions of power. We have illustrated how studies taking, broadly, each of the stylized approaches in Table 1 – *food interests and incentives, food regimes, food institutions, food contentions and movements, food discourses, food socio-natures* – offer valuable insights about food system change and transformation. For each problematique, we have also illustrated the value of combining several approaches. Whilst the sections have illustrated such combinations for particular topics and issues, there is also much that is shared between the different sections, and some cross-cutting insights emerge.

A first is the prominent role that food and hunger play, not only within development narratives, but in broader conceptions of the state and its social contract. This was clearly highlighted in the first section on state power, but was exemplified in all others – whether in the justifications for the dominant technology lock-ins exhibited by different countries' experiences of the green revolution, to the understanding that agri-food economies still dominate most rural contexts and rural livelihoods, with many poor people involved in farming or agriculture labour. Careful readers will notice a tension amongst the perspectives explored here – some of which question the regimes of power and technology which have led to the current productionist thrust of global food and agricultural policy, and some of which caution against eschewing this narrative completely. But questioning a blunt focus on production and yields need not blind us to situations where enhanced agricultural productivity, if pursued as a means of building inclusive rural societies (rather than an end in itself), can exist as part of a renewed focus on what rural farmers and producers actually want and need to support their families in situations of continued poverty and hunger. With all the talk of production, hunger and commercial decisions we also note that it is via food cultures, cooking and eating that most people still experience food and its politics – which

can be shaped or more subtly moulded by the politics of hunger and production, but are not determined solely by them.

Second, the sections share a concern with how dominant interests exercise themselves in today's corporate power structures and in the dismantling of socially-oriented state services, but also adopt a critical stance towards an overly narrow focus on commercialization and corporate interests that leaves other areas of power untouched. This includes those local, mundane, micropolitics of food that are not separate from the workings of corporate capital but include different constellations of land, labour, gender and ethnic power than those which operate in global corporate-political arenas. This suggests the importance of taking seriously questions of participation and voice by those who are marginalized from centres of power – including via deeply entrenched systems of patriarchy and coloniality (Cadieux & Slocum, 2015; Hayes-Conroy & Hayes-Conroy, 2013). Against this background, social movements, collective action and forms of 'unruly politics', protest and resistance (Hossain & Scott-Villiers, 2017) point to ways in which the inequities and injustice that continue to shape politics in every part of the world might be overcome though everyday collective action and protest.

Third, the sections together highlight the value of integrating material dimensions of politics and power (concerned with control over resources and opportunities) with the politics of knowledge (concerned not only with material resources, but directing people's beliefs, values, behaviours and practices). As in approaches to *food discourses*, *food contentions and movements*, and *food socio-natures*, the latter can be conceptualised in terms of narrative and discourse, embodied knowledges and practices, or simply alternative visions and understandings of the world. As well as outlining these dominant understandings which shape the politics of knowledge, we have drawn attention to alternative visions, whether articulated by social movements or women and men in marginalised settings, which do not accept the solutions on offer or even the way the problem is being framed.

Despite these recurring themes which emerge from combining different approaches, we resist the idea that there can be a single integrative framework or theory of food politics. The approaches we have illustrated are grounded in broader theories of power and political perspectives that are rightly diverse and plural or even incompatible on political, epistemological or even ontological grounds. Instead, we argue for synthesis based on triangulation, where different approaches are combined to shine light from different angles. In so doing, a richer picture is produced reflecting this plurality, and acknowledging the possibility of multiple pathways to the transformations we believe are necessary to achieve sustainable, equitable food systems of the future.

The *pathways* approach of the STEPS Centre (Leach & Scoones, 2010) has been useful in highlighting and analysing multiple trajectories of system change (where systems have interlocking social, technological, ecological elements), shaped by interventions and power relations. Integrating power with such systems thinking has been important in understanding different pathways as underpinned and justified by narratives – drawing attention to power/knowledge, discourse and the politics of knowledge as a key dimension of power relations. This was exemplified in multiple sections above – whether in discussing the diffusion of colonial and cold-war politics via the pursuit of various food and technology regimes (the first two sections) or in dominant and alternative approaches to nutrition and food cultures (the last two sections). Describing such dominant and alternative pathways leads in turn to a common set of questions which can be asked of any given food (or indeed broader development) issue. These are encapsulated in the 'four Ds' approach summarised in Box A. The first three Ds derive from the original conceptualization by the STEPS Centre (Stirling, 2009; Stirling, Arond, Leach, Ely, & Scoones, 2010). In

keeping with our explicit focus on politics in this review, we have added a fourth D – Democracy – to draw explicit attention to how issues of inclusion and voice can be considered as both processes and outcomes in food system change that prioritises equity and justice (Millstone, Thompson, & Brooks, 2009). By Democracy we do not refer only and necessarily to formal systems of representative democracy, which in many countries have shown themselves tainted and inadequate in addressing questions of equity. Rather, we highlight the importance of democratic values of inclusion and respect for voice, alternatives and diversity, whether through formal or informal, and representative or direct, participatory modes.

Box A – 4Ds for food (extended from Stirling et al., 2010) The '3 Ds approach emerged out of the STEPS centre work on pathways, asking for any given issue:

o What **Directions** are different pathways headed in? What goals, values, interests, power relations are driving particular pathways – and how might they be re-oriented?
o Is there a sufficient **Diversity** of pathways? Are these diverse enough to resist powerful processes of lock-in, build resilience in the face of uncertainty, and respond to a variety of contexts and values?
o What are the implications for **Distribution**? Who stands to gain or lose from current or proposed pathways, or alternatives? How will choosing between different pathways affect inequities of wealth, power, resource use, and opportunity – across various axes (gender, ethnicity, class, place and so on)?

Adding a fourth D:

o What are the implications for **Democracy** – broadly understood to encompass equity of opportunity for voice and inclusion, and processes that enable and enhance this, whether formal or informal?

Applying such a set of questions in detail to the themes and topics discussed in this review (or indeed to other future topics) would be a further major task which we lack the space to carry out thoroughly. But for the purposes of illustration, we do so here for an example addressed in several sections, concerning the overall direction of international agri-food policy, of which we can ask these questions as follows:

*What **Directions** is international agri-food policy heading in?* International agri-food policy is still broadly oriented towards a productionist 'green revolution' style food security policy emphasizing technical solutions to entrenched political problems such as climate change, hunger and broader forms of food system inequity. This is driven by existing government food security policies (policy inertia); and support from sections of some international level organizations including the CGIAR, the Bill and Melinda Gates Foundation, and key bilateral agencies including USAID and DFID (Anderson, Nisbett, Clément, & Harris, 2019). More recently, issues of sustainability have been taken on board by such narratives, not least thanks to the exigencies of the climate crisis. But environmental discourse is easily co-opted into a push towards ever more efficient agriculture – returning us to a modified form of productionism that still fails to take on equity or the broader politics of food (ibid.).

*Is there a sufficient **Diversity** of pathways?* The decades-long hegemony of such positions has led to their entrenchment amongst the views of many influential organizations, such as those listed above, and particular individual champions or emblematic fora which primarily reward productionist approaches. But we see some promising alternative approaches which have begun to influence the views of individuals and groups within the mainstream organizations and fora – including agro-ecological, socio-ecological and other systemic approaches (see Foran et al., 2014)). The diversity of food system travel more generally is mixed: more availability of fresh nutrient-rich foods for those who can afford them; more processed and cheap foods for those who cannot (Global Panel on Agriculture and Food Systems for Nutrition, 2016). This is driven by large scale private sector interests (Hossain, 2017) but also national policies that promote production of staples over micronutrient-rich foods.

*What are the implications for **Distribution**?* The distributional consequences resulting from this insufficient diversity of pathways is writ large in the population level statistics we cited on hunger and malnutrition at the beginning of this paper – trends which seem to be worsening rather than improving (at least with regard to numbers of hungry, overweight and obese, and those lacking in quality diets providing sufficient nutrients). Far from everyone experiencing such burdens uniformly, or even according to income and wealth, we know that such burdens are cut by further disadvantages such as gender, ethnicity, caste, disability and location or type of settlement. But other distributional consequences are prevalent in the ways that certain food cultures dominate while others decline, and in misplaced assumptions about what is driving people's 'behaviour' linked to inappropriate dietary advice and public health approaches. Not to be ignored are the distributional consequences for food producers and food sector workers more broadly: technical solutions, government subsidies, agricultural extension (where still supported) benefit particular groups and classes of farmers and fisherfolk (male, staple and export oriented agricultures). Meanwhile broader structural deficiencies in labour regulation disadvantage food system workers, whether as agricultural labourers, plantation workers, transport workers, factory workers and retailers – many of whom are in already marginal and precarious conditions. The section above on inclusive structural transformation points to ways in which a more nuanced understanding of rural livelihoods can tackle the historically unjust ways in which support for the rural sector has unfolded.

All of these questions point towards asking about the implications for **Democracy** – *whose voices and perspectives could be and are represented, whether in formal or informal processes*? It is almost a tired cliché to point out that food systems are not shaped in the interests of the poor because the poor are not present in those fora – commercial board rooms, parliaments and government bodies, national councils, international conferences, trade policy negotiations – which shape the food system. Alternative pathways represented by the food sovereignty movement or attempts to bring about more participatory municipal governance or regional food councils (Rocha & Lessa, 2009) are a step in the right direction, but are unlikely to lead on their own to the kind of systemic revolution or transformation in national and international food systems that would deliver food both equitably and sustainably. But without further such endeavours, the directions, diversity and distribution of food system benefits are likely to remain unequal for some time to come. Tolerance for such inequality will depend on a variety of factors examined earlier – regime type, prices, the existence of safety nets and subsidies – but given the current direction of food and economic systems, food riots are likely to form part of the way in which populations assert their demands in the face of the more acute and periodic failures in the food system (against the chronic failures exhibited already) (Hossain & Scott-Villiers, 2017). Even among richer and nutritionally-replete populations, recent concerns over climate implications of meat production for instance are fuelling social debate on the role of citizens in food system choices.

This extended 4Ds analysis offers the potential to illuminate how transformative change towards more equitable and sustainable food systems occurs, and when it does not; and what forms and relations of power are involved, and how they operate, to what effects. As we have shown, such understanding of food politics is a thoroughly interdisciplinary task, as befits development studies. Operationalizing this framework also requires a transdisciplinary, or engaged, research approach. Characteristics of such engaged food politics research include alliances between researchers and activists or blended identities of scholars and activists (Anderson & Leach, 2019; Leach, Gaventa, & Oswald, 2017); strong contributions from practitioners; recognition of different yet equally valid ways of knowing, and active seeking-out of knowledge based on different cosmologies or locales. The ends of transformation must be determined in a genuinely democratic way, with the voices of people who are systematically disempowered within the current dominant food system elevated and amplified. The indicators of success chosen need to reflect those ends, and not be used merely because they are relatively easy to measure or have been used before.

There are many options available for tackling power imbalances, including confrontation, negotiation, leading by example, waiting for new forms of power to emerge and supporting them, exploring invisible power such as digital public spaces, and building new narratives that value marginalised perspectives and social innovation. Evidence can be a useful tool for political advocacy, but will not shift policy processes on its own. Framing, and discourse to get the framing right, are therefore important in driving change toward sustainability and equity.

We must also be wary of the self-reinforcing nature of pathways of change that limit the array of alternatives and allocate power to incumbents, and be prepared to keep challenging these, and raising alternatives. This form of work requires respect for researchers and practitioners with diverse backgrounds and styles of work. It also requires humility, reflexivity, and the capacity to hear and respond to challenges to one's cherished assumptions. This includes recognizing the partiality (and political positioning) of all analysis and action, including our own. The essence of a pathways approach is an emphasis on the partiality of dominant perspectives from which we cannot fully extract ourselves as members of relatively elite development/scholarship networks. That is, to confront power in the food system, one must also confront the assumptions and hierarchies that divide researchers from different disciplines, divide researchers from practitioners, and shape the ways research contributes to change.

These are frontier areas for future research towards food system transformation. Our own more limited intention in this review has been to help set the stage, drawing on the rigour of the large volume of research in this area to ask the engaged and critical questions that begin to open up alternative pathways. The SDG process has raised the prominence of food and related issues in development. We have argued for the need to both deepen and extend the analysis of food as always political and never far from the broader questions of equity and sustainability that ought to be at the heart of all such global collective endeavour.

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