Proceedings of the Nutrition Society (2023), **82**, 227–233 doi:10.1017/S0029665122002841
 First published online 12 December 2022

The Nutrition Society Summer Conference 2022 was hosted collaboratively by Sheffield Hallam University, the University of Sheffield and Sheffield City Council on 12–15 July 2022

Conference on 'Food and nutrition: Pathways to a sustainable future' Symposium one: Building ethical food systems

Food, health and sustainability

Peter Jackson
Institute for Sustainable Food, University of Sheffield, Sheffield, S10 2TN, UK

This review makes a case for taking an integrated 'food systems' approach to explore the links between health and sustainability rather than treating them as separate topics. Unlike more linear 'farm-to-fork' conceptions, a systems approach emphasises the links between domains and sectors, helping avoid perverse effects where an intervention at one point in the system can have unanticipated consequences at other points. Adopting this approach, the review argues that food security and sustainability are as much a socio-cultural as a technical challenge requiring the combined forces of researchers from the natural and social sciences together with a range of stakeholders from government, business and civil society. Meeting the twin challenges of health and sustainability will require changes to intensive food production systems, dietary change and reductions in current levels of food waste. The review explores why dietary practices are so resistant to change seeking alternatives to the deficit thinking that pervades much advice on 'healthy eating'. It explores the locus of responsibility for food system change, emphasising the asymmetrical power relations that shape contemporary dietary choices. The review includes an example of food system research, the H3 project (healthy soil, healthy food, healthy people), which seeks to transform UK food systems 'from the ground up', adopting the principles outlined in the body of the review.

Sustainability: Food security: Food systems: Dietary change

Food security and sustainability are among the most serious challenges facing humanity today. In their work on planetary boundaries, Röckstrom *et al*. highlighted three areas where we are already living beyond the safe operating space for humanity: climate, biodiversity and nitrogen cycle – all areas that are closely connected to food[1]. The food system accounts for about one-third of greenhouse gas emissions and is a major driver of climate change[2]. Intensive food production is a leading cause of biodiversity loss and the application of artificial fertilisers causes major disruption to the nitrogen cycle. Drawing together a range of evidence on these issues, a recent report from the Royal Society in London concluded that intensive food production had a range of adverse environmental effects on biodiversity, resource depletion, pollution and climate change[3]. Addressing these issues will require dietary change, more sustainable agricultural practices, innovations in food production and a reduction in food waste.

The food system is also responsible for major impacts on public health. Malnutrition, in all its forms, is now the leading cause of ill-health and death worldwide[4]. Poor diets, whether through under-consumption, leading to chronic stunting and acute wasting, or over-consumption of highly processed foods are closely linked to a range of non-communicable diseases including cancer, CVD and

Abbreviation: FSA, Food Standards Agency.
Corresponding author: Peter Jackson, email p.a.jackson@sheffield.ac.uk

diabetes. As a result, consumers are being encouraged to reduce their intake of saturated fat, salt and sugar and to increase their consumption of fruit and vegetables. Public health campaigns such as Change4Life were introduced in the UK to encourage 'healthy eating' and increased physical exercise. While there is some evidence of short-term success in meeting these ends, evidence of their longer-term impact is lacking[5]. Similar campaigns have been conducted across Europe and more widely. In an international review, a recent study identified over a hundred cases of food-related health campaigns and dietary interventions from climate-smart school lunches in Sweden to taxes on fast food in Hungary and Mexico. Longer-term evaluations had been conducted in only a few of these cases[6].

To address these global challenges, this review will argue that we need to adopt a 'food systems' approach, addressing health and sustainability in tandem, not as separate objectives. The review will outline the environmental and health challenges that are associated with our current food system; identify the need for dietary change (and highlight why diets are so resistant to change); focus on public understanding of the need for change; and provide a counter-argument to the widespread adoption of a 'deficit approach'. Finally, the review will provide an introduction to a current research project that seeks to address these issues through a programme of empirical work, concluding with some arguments about the locus of responsibility for food system change. First, though, we provide some definitions of our key terms.

Definitions

Food security refers to the availability of sustainable, healthy food for all. More formally, food security can be said to exist when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. This definition was originally put forward at the World Food Summit in 1996 and has been subject to numerous revisions over subsequent years, an intellectual genealogy that has been traced in detail by Jane Midgley[7]. Food security also encompasses the fear that adequate food may not be available in future or that it may not be provided in socially acceptable ways (free from the potentially humiliating and stigmating experience of accessing foodbanks and other forms of emergency food aid). These additional considerations have been put forward by campaign groups such as the Child Poverty Action Group who emphasise the idea of food as a human right rather than an object of charity[8].

Sustainability is equally challenging to define but is usually acknowledged to be multi-dimensional, including economic, social and environmental aspects. Most definitions draw on the language of the Brundtland report regarding its inter-generational aspects. For example, an FAO High Level Panel of Experts concluded that a sustainable food system 'ensures food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition of future generations are not compromised'[9]. It should be economically profitable, have broad-based benefits for society and a positive impact on the natural environment.

The food security challenge

By 2050, the world's population will have grown to about 10 billion people (compared to the current total of about 7·9 billion)[10]. At the same time, available agricultural land is decreasing through the effects of urbanisation and climate change. To meet the growing demand, we will need to produce 'more from less' through a process that is sometimes referred to as sustainable intensification[11]. We will also need to change consumption patterns and reduce food waste. To address the public health challenges that are associated with food insecurity, we will also need to address the stark inequalities in food-related non-communicable diseases, such as the effects of obesity and overweight (mainly but not exclusively in the Global North) and malnutrition and chronic hunger (mainly in the Global South).

Globally, it is estimated that over 700 m people went hungry in 2020 and more than 30 % of the world's population were living in moderate or severe food insecurity, a situation that was exacerbated by the COVID-19 pandemic[12]. The pattern is geographically uneven with hunger and malnutrition most prevalent in South Asia and sub-Saharan Africa. By contrast, overweight and obesity are concentrated in the Global North where, for example, one-quarter of the UK population is now defined as obese (BMI >30), projected to rise to >50 % by 2050[13].

Dietary change

Readers of this journal will be familiar with the EAT-Lancet report on 'food in the Anthropocene' and its formulation of a 'reference diet' indicating the changes that would be needed to develop a globally more sustainable diet[14]. The recommended diet would be predominantly plant-based with low amounts of animal-based foods, refined grains, highly processed foods or added sugars. To deliver this change, the global consumption of foods such as red meat and sugar would need to decrease by about 50 % while the consumption of nuts, fruits, vegetables and legumes would need to double. Questions have been raised about the affordability of the proposed changes, their cultural appropriateness and the methodology on which the recommendations were based[15,16]. But the broad principles are hard to dispute if seen, as intended, as a 'reference diet' rather than a universal dietary prescription.

Why, though, are diets so resistant to change, particularly when framed in terms of individual 'behaviour change' initiatives? Rather than being a matter of individualised choice, diets are known to be socially

https://doi.org/10.1017/S0029665122002841 Published online by Cambridge University Press

embedded[17], rooted within deep-seated cultural practices and well-established routines and rhythms[18]. New frameworks have been proposed, drawing on the language of social practice theory, which seek to understand the rules and resources that configure family 'food choices' including the enabling and constraining conditions under which those choices are made[19].

Besides their rootedness in everyday life, dietary practices also have significant ethical and moral dimensions which contribute to their relative intransigence. Consider, for example, debates about the alleged decline of the Sunday lunch, a meal whose significance is likened by some to a religious ritual or sacred tradition which it would be sacrilegious to lose[20]. Given the way memory and tradition are continually reshaped to make sense of the past from the standpoint of the present, the enduring status of the 'family meal' is virtually impervious to rational criticism (whether or not it is rooted in actual practice)[21]. Similarly, the cultural and historical importance attached to 'feeding the family', often seen as an archetypically female role[22], means that any threat to it can be interpreted as a moral outrage. This was demonstrated by the furore that surrounded Jamie Oliver's comments about 'sinner ladies' and 'junk food mums' during a controversy over changes to school meals at Rawmarsh school in South Yorkshire[23]. This specific case was part of a wider discourse about mothers' (and particularly working-class mothers') alleged lack of culinary knowledge and inability to provide healthy food for their children.

Last but not least, dietary patterns are shaped by deeply entrenched institutions and powerful economic interests that range from the elaborate infrastructure that supports the weekly supermarket shop to the vested interests of agri-businesses and corporate capital[24,25].

All of these forces mean that dietary change is not readily susceptible to didactic messaging about 'consumer choice' or individualised 'behaviour change'. But the issue goes deeper than this. Even the most benign and well-intentioned public health messaging around food often falls prey to condescension and paternalism in its approach to nutritional advice or other food-related practices. In the UK, for example, the Food Standards Agency (FSA) has been particularly prone to this in its messaging around food safety week, picturing families who inadvertently expose their households to Campylobacter and other foodborne diseases through their cavalier attitude to washing raw poultry. There is little sense here of the logic that informs such practices even if these practices and their underlying logic run counter to official food safety advice ('Don't wash raw chicken'), as followed by the 'true heroes' of domestic hygiene[26]. These messages are doubly ironic in the sense that the FSA has commissioned some excellent research on domestic kitchen practices, providing an ethnographic understanding of the (cultural, religious and ethnic) reasons that inform the practices that the FSA warn against[27].

Similarly, on domestic food waste, rather than assuming that we live in a 'throwaway society' where profligate consumers have little or no concern about the food they waste, ethnographic research suggests that there is usually a logic behind behaviours that might seem irrational from a policy perspective[28]. For example, families might batch-cook large amounts of food with good intentions to reheat it for later consumption but then feel the need for culinary variety; they may plan to eat at home but then be tempted to go out to celebrate an unexpected event or to enjoy an alfresco meal; they may need to prepare different meals to accommodate the conflicting time schedules or culinary tastes of different household members, and so on. These might be less than ideal practices from a waste reduction perspective but they have a logic of their own (sometimes described as 'good reasons for bad behaviour') which policymakers would do well to understand before formulating interventions.

Public understanding

If there is a contrast between the logic of policymakers and the reasoning of those for whom they seek to intervene, then a similar argument can be made about the assumed lack of public understanding about food insecurity and sustainability. Despite growing levels of food insecurity in the UK, for example (where 1:6 respondents to a recent FSA survey were reported to be food insecure in April–June 2021)[29], food does not always seem to be a major focus of public concern. While there appears to be growing public interest in the UK in the links between food and health, reported in the National Food Strategy public dialogues in terms of an 'appetite for change', there seems to be less popular understanding of the connections between food and the environment. According to a literature review, undertaken for the FSA's Our Food Future programme, 'The most influential factors in food choice are price, quality and taste. Health concerns are subordinate to these, and environmental considerations are lesser still' (page 5). The review's author, Andrew Darnton, went on to say that when the public were first told about food's environmental impacts, their initial response was one of surprise (page 6), later described as 'a lack of awareness bordering on denial' (page 38)[30]. These findings are surprising in light of current environmental concerns, particularly among younger people, and attitudes may have changed since that review was published in 2016. But the underlying sense of an ignorant public with little interest in the links between food, health and environment needs to be questioned.

Countering a deficit approach

The idea that the public suffer from a lack of understanding or a dearth of knowledge and skills is widespread among political observers and media commentators[31]. This view is often referred to as a 'deficit approach' and is present in several of the examples we have discussed earlier, from domestic waste to food safety advice. It is also prevalent in assumptions about the alleged decline in cooking skills, the evidence for which is, at

https://doi.org/10.1017/S0029665122002841 Published online by Cambridge University Press

best, shaky. See, for example, strident headlines such as 'Home cooking in decline as low-income households turn to ready meals' (The Guardian, 5 September 2013) or 'REVEALED: The traditional cooking skills that are DYING out' (Daily Express, 7 November 2017). This view is dangerous because, despite the lack of solid evidence, it leads to the tendency to 'blame the consumer' for all that is wrong with contemporary food systems[32]. Jamie Oliver's Ministry of Food (a cookbook, political campaign and TV series that aired in 2008) set out to 'teach a town to cook', based on the argument that a generation of people had forgotten how to cook even the simplest meals and that, starting in Rotherham (previously encountered in Jamie's School Dinners project) he would provide the skills and spread them through the local population via an invitation to 'pass it on' to a wider network of family and friends. His initiative received a mixed reception with some people in Rotherham uniting under the slogan 'Jamie Go Home'[33]. Others have questioned the long-term impact of his interventions, with some critics suggesting that his work contributed to a problematic positioning of individuals as uniquely responsible for their dietary choices, ignoring the wider social forces that shape their lives[34]. Those that have researched the issue suggest that powerful claims about the 'death of cooking' are being made in the face of limited evidence as 'studies of home cooking practices and the relationship between culinary ability, food choices and eating practices remain noticeable by their absence' (page 6)[35]. In the face of such limited empirical evidence, others have described the insensitivity of those who target cooking classes at women and lower socio-economic groups[36].

The H3 project: transforming UK food systems 'from the ground up'

This section provides some examples from a current research project which demonstrates the value of an integrated, interdisciplinary 'food systems' approach, highlighting the new questions that arise when health and sustainability are treated as twin objectives rather than as separate issues. The H3 project (healthy soil, healthy food, healthy people) seeks to transform food systems 'from the ground up', including innovations in soil health, working at a range of scales from the lab and the field, to the farmed landscape, out into cities and communities across the UK. It is funded through UKRI's 'Transforming UK food systems for health and environment' research programme. The H3 project includes a series of work packages on novel growing techniques, hybrid hydroponic horticulture, landscape-scale regenerative farming, biofortification, increased fibre consumption and improved resilience in supply chains[37]. But it is the connections between the work packages and across the programme that gives the project its novelty and where the scope for genuine innovation lies.

Some examples are highlighted below of the kind of questions that the H3 team are asking and which would probably not have arisen if the project had been working within conventional disciplinary silos.

- *Will regenerative agriculture lead to the production of more nutritious food?*
  The H3 team are working with groups of farmers who are experimenting with various forms of regenerative agriculture such as reduced ploughing (low or no till) and the introduction of herbal lays. While these techniques have acknowledged environmental benefits in terms of soil quality and biodiversity, there is little or no definitive evidence of their impact on food quality, whether measured in terms of nutrition or taste. The H3 project seeks to provide that evidence through a series of *environmental* measures and an exploration of farming practices and consumer attitudes to the produce of regenerative agriculture.
- *Can an effective measure of soil health be produced?*
  Soil health is a popular concept but one that evades easy measurement. Different aspects such as pH, soil compaction or porosity can all be measured individually but composite measures are harder to establish. Rather than seeking a single, all-purpose measure, a range of different measures may be appropriate, depending on the purpose for which the data are needed. The H3 team seeks to address this gap through detailed conversations between environmental and social scientists.
- *Can the output of hydroponic food production systems be broadened out to feed urban communities including those on low incomes?*
  To date, hydroponic and related systems of urban agriculture, whether using soil or artificial growth mediums, have mostly been used to supply 'high end' restaurants with herbs and other relatively expensive produce. H3's work has focused on the development of low-cost systems with low environmental impacts, *capable* of producing a wider range of crops including beans, basil, rocket, peppers and tomatoes. Locating these systems in peri-urban areas also has a wider range of benefits in terms of reducing 'food miles' and bringing the point of production closer to a potential supply of agricultural labour and prospective consumers.
- *Can biofortification be used to increase the nutritional quality of popularly consumed foods?*
  H3's work aims to address shortfalls in micronutrient uptake among low-income populations by enhancing the nutrient content of UK-produced vegetables and legumes, leading to a sustainable transformation of the food system with a concomitant positive impact on health. The research aims to use novel technologies to support more stable nutrient concentration and enrichment in UK-produced crops, focusing on foods that are already widely consumed such as tomatoes, lettuce and beans. The work will also examine questions of food quality, food safety, nutrient bioavailability and consumer acceptance.
- *Can fibre consumption among children and low-income communities be increased via changes to school breakfast programmes?*

https://doi.org/10.1017/S0029665122002841 Published online by Cambridge University Press

H3's research aims to transform human health through dietary change, focusing on the UK's inadequate dietary fibre intake. The research will engage with key players in the cereal supply chain to identify strategies to incorporate higher levels of fibre into the food system (via reduced refining and fortification), addressing issues of consumer preference, palatability and cost. The research will adopt a 'health by stealth' approach rather than more didactic approaches to dietary change. This will involve reformulating existing products such as breakfast bagels which are popular with the project's target groups (children and low-income communities).

- *How can the resilience of UK supply chains be improved through interventions in food retailing?* Disruptions to UK food supplies arise from a range of sources. Recent disruptions include the effects of Brexit on international trade, the impact of the Covid pandemic and the war in Ukraine. These disruptions have a particularly adverse effect on low-income consumers, pushing up prices and exacerbating existing inequalities. Food retailers rely on just-in-time supply chains in order to fulfil consumer needs without incurring costly storage charges. The H3 project is developing and testing a series of adaptation measures to improve the supply of healthy food to low-income consumers while minimising the environmental impact of overseas producers who supply UK markets. Using scenario-building techniques and back-casting methods, the H3 team will co-produce and trial a range of interventions, working with retailers, cross-sector organisations, government agencies and international sustainability standards organisations. The research will focus on fruits and vegetables grown in the UK as well as imported from low-income countries such as Uganda and Kenya. Innovations will include print and digital communication campaigns from retailers, product replacement recommendations and cross-sector agreement standards.

The locus of responsibility for food system change

As previously discussed, many nutritional interventions and other behaviour change initiatives tend to take an individual approach. Such an approach is politically appealing as it places the onus on individuals who can be held accountable for their dietary decisions, once they have been provided with the relevant nutritional advice. This model of 'informed choice' has not been successful in producing the kind of system-wide changes that are needed to address major health challenges such as those associated with rising levels of obesity and overweight. More emphasis is therefore being placed on the 'food environment' and other institutional forces that shape individual dietary choices, which behavioural economists sometimes refer to in terms of modifications to the food system's 'choice architecture'.

In the UK, for example, the recently published Government Food Strategy illustrates the tangled thinking that lies behind current public policy on these issues. Early drafts of the Strategy were criticised for insisting on the 'important role for individual responsibility and choice' which successive UK governments have appealed to over the decades, with no apparent success[38]. After some adjustment to the draft text, the final version reads as follows:

> 'There is a shared responsibility to identify the solution to obesity; industry has a role to play through its responsibility for promoting and supplying healthier foods, government has a role in making targeted regulatory interventions to support change, and individual consumers, empowered with better information about healthier choices, can stimulate demand for healthier foods. Creating a healthier food environment could mean encouraging reformulation to reduce calories, reducing portion sizes, innovating and investing in new technologies, and coupling any changes with individuals making healthier lifestyle choices. In any case, government needs to set the right expectations of industry, provide the right regulatory interventions, and support the necessary innovation to drive a healthier food environment' (page 23)[39].

While the emphasis on 'shared responsibility' is welcome, the onus on individual consumers to make 'healthier choices' remains all too clear, with some acknowledgement of the need for 'a healthier food environment', where the food industry is encouraged to reformulate and where regulatory responsibility falls to government. While these debates go unresolved, research shows that rates of obesity and overweight continue to rise despite successive policy interventions[40].

Rather than 'empowering people to make healthier choices' as government policy continues to advocate[41], many have argued that more emphasis should be placed on wider systems and practices including the institutions and infrastructure that shape individual choice. This approach to the identification of 'change points' seems to be gaining traction in policy circles in relation to public health and other areas such as water and energy policy[42]. Greater emphasis also needs to be placed on the power asymmetries that shape contemporary food systems where social science research has much to offer in terms of revealing the unequal 'power geometries' that influence policy and practice, as recently illustrated in relation to the European Commission's 'Farm to Fork' strategy[43].

Conclusions

While this review has focused primarily on UK examples, similar issues and potential solutions can be observed elsewhere in the world. As was argued by its earliest exponents, a 'food systems' perspective is particularly appropriate for putting specific circumstances such as those affecting the UK in a global context[44]. Issues such as over- or under-concentration, food loss and food waste, as well as the differential impact of climate change on food security and sustainability all look very

https://doi.org/10.1017/S0029665122002841 Published online by Cambridge University Press

different in different places but all would benefit from a more integrated, interdisciplinary, system-wide perspective[45]. There is also an array of valuable evidence about how other European countries, besides the UK, are addressing the current challenges of food security and sustainability including proposals for how to effect the transition towards a more just, healthy and sustainable food system. One such evidence review includes a list of 'good practice' examples from across the EU, focusing on cases where there is peer-reviewed evidence of their long-term success[46].

This review has argued the case for an integrated 'food systems' approach, drawing on inter-disciplinary research to draw out the links between health and sustainability, under- and over-consumption, Global North and South, and natural and social science perspectives. The review has outlined the nature of contemporary food system challenges in relation to environmental sustainability and public health. It has demonstrated the need for dietary change and why this has proved to be so intractable. It has criticised 'deficit' approaches to public understanding and advocated a more systemic focus on the institutions and infrastructure that support existing dietary practices and health inequalities. Using the current H3 research programme as an example, the review has illustrated how new research questions can be developed and addressed once health and sustainability are approached as twin goals rather than as separate issues. Finally, the review has discussed where the locus of responsibility for food system change lies, with less emphasis on individual choice and more on the identification of change points within wider systems of social practice.

Acknowledgements

The author thanks the organisers of the 2022 Nutrition Society annual conference for their invitation to speak at the conference where an earlier version of this review was presented.

Financial Support

The author thanks the UKRI Strategic Priorities Fund for supporting the H3 project (healthy soil, healthy food, healthy people) as part of the 'Transforming UK food systems' research programme (grant number BB/V004719/1).

Conflict of Interest

None.

Authorship

The author had sole responsibility for all aspects of preparation of this paper.

References

1. Röckstrom J, Steffen W, Noone K *et al*. (2009) A safe operating space for humanity. *Nature* **461**, 472–475.
2. Crippa M, Solazzo, E, Guizzardi *et al*. (2021) Food systems are responsible for a third of global anthropogenic GHG emissions. *Nat Food* **2**, 198–209.
3. Royal Society (2021) *Nourishing ten Billion Sustainably: Resilient Food Production in A Time of Climate Change*. London: Royal Society, Climate Change: Science and Solutions.
4. Global Nutrition Review (2021) https://globalnutritionreport.org/reports/2021-global-nutrition-report/ (accessed June 2022).
5. Wrieden W & Levy L (2016) 'Change4Life smart swaps': quasi-experimental evaluation of a natural experiment. *Public Health Nutr* **19**, 2388–2392.
6. Beacham J, Evans D & Jackson P (2022) Towards a geography of dietary change: lessons from an international context. Paper presented to the Royal Geographical Society annual conference (London).
7. Midgley JL (2013) Food (in)security in the Global 'North' and 'South'. In *The Handbook of Food Research*, pp. 425–438 [A Murcott, W Belasco & P Jackson, editors]. London: Bloomsbury.
8. CPAG (2020) Is food the right response to child hunger? https://cpag.org.uk/news-blogs/news-listings/food-right-response-child-hunger (accessed June 2022).
9. FAO (2018) Food systems: concepts and framework. https://www.fao.org/3/ca2079en/CA2079EN.pdf (accessed June 2022).
10. UN Department of Economic and Social Affairs, Population Division (2019) World population prospects 2019. https://population.un.org/wpp/Publication/Files/WPP2019_10KeyFindings.pdf (accessed June 2022).
11. Godfray HC & Garnett T (2014) Food security and sustainable intensification. *Philos Trans R Soc, B* **369**, https://doi.org/10.1098/rstb.2012.0273
12. FAO, IFAD, UNICEF, WFP and WHO (2021) *The state of food security and nutrition in the world 2021*. Rome, FAO. https://doi.org/104.060/cb4474en.
13. Nursing Times (2014) Half of the UK population could be obese by 2050. https://www.nursingtimes.net/opinion/half-of-the-uk-population-could-be-obese-by-2050-24-04-2014/ (accessed June 2022).
14. Willett W, Rockström J, Loken B *et al*. (2019) Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. *The Lancet* **393**, 447–492.
15. Hirvonen K, Bai Y, Headey D *et al*. (2020) Affordability of the EAT–Lancet reference diet: a global analysis. *The Lancet Glob Health* **8**, e59–e66.
16. Zagmutt FJ, Pouzou JG & Costard S (2019) The EAT–Lancet Commission: a flawed approach? *The Lancet* **394**, 1140–1141.
17. Murcott A (2019) *Introducing the Sociology of Food and Eating*. London: Bloomsbury.
18. Warde A (2016) *The Practice of Eating*. Cambridge: Polity Press.
19. Delormier T, Frohlich KL & Potvin L (2009) Food and eating as social practice: understanding eating patterns as social phenomena and implications for public health. *Sociol Health Illn* **31**, 215–228.
20. Jackson P, Olive S & Smith G (2009) Myths of the family meal. In *Changing Families, Changing Food*, pp. 131–145 [P Jackson, editor]. Basingstoke: Palgrave Macmillan.

21. Samuel R & Thompson P (1990) *The Myths We Live By*. London: Routledge.
22. De Vault M (1991) *Feeding the Family: The Social Organization of Caring as Gendered Work*. Chicago: University of Chicago Press.
23. Fox R & Smith G (2010) Sinner ladies and the Gospel of good taste: geographies of food, class and care. *Health Place* **17**, 403–412.
24. Morgan K, Marsden T & Murdoch J (2008) *Worlds of Food: Place, Power, and Provenance in the Food Chain*. Oxford: Oxford University Press.
25. Clapp J & Scrinis G (2017) Big food, nutritionism, and corporate power. *Globalizations* **14**, 578–595.
26. FSA (2015) Food safety week video: don't wash raw chicken. https://vimeo.com/126105095 (accessed June 2022).
27. FSA (2013) Domestic kitchen practices: findings from the 'Kitchen Life' study. https://www.food.gov.uk/sites/default/files/media/document/818-1-1496_KITCHEN_LIFE_FINAL_REPORT_10-07-13.pdf (accessed June 2022).
28. Evans D (2012) Beyond the throwaway society: ordinary domestic practice and a sociological approach to household food waste. *Sociology* **46**, 41–56.
29. FSA (2022) Food & you 2, wave 3. https://www.food.gov.uk/research/food-and-you-2/food-and-you-2-wave-3 (accessed June 2022).
30. FSA (2016) Our future food literature review. https://www.food.gov.uk/sites/default/files/media/document/our-food-future-lit-review.pdf (accessed June 2022).
31. Meah A & Watson M (2011) Saints and slackers: challenging discourses about the decline of domestic cooking. *Sociol Res Online* **16**, 108–120.
32. Meah A (2014) Still blaming the consumer? Geographies of responsibility in domestic food safety practices. *Crit Public Health* **24**, 88–103.
33. Jackson P (2016) Go Home Jamie: reframing consumer choice. *Soc Cult Geogr* **17**, 753–757.
34. Rich E (2011) 'I see her being obesed!': public pedagogy, reality media and the obesity crisis. *Health* **15**, 3–21.
35. Short F (2006) *Kitchen Secrets: The Meaning of Cooking in Everyday Life*. Oxford: Berg.
36. Caraher M & Lang T (1999) Can't cook, won't cook: a review of cooking skills and their relevance to health promotion. *Int J Health Promot Educ* **37**, 89–100.
37. Jackson P, Cameron D, Rolfe S *et al*. (2012) Healthy soil, healthy food, healthy people: an outline of the H3 project. *Nutr Bull* **46**, 497–505.
38. 'Defra plan shows no stomach for bold action on food poverty and obesity', The Guardian, 10 June 2022. https://www.theguardian.com/politics/2022/jun/10/defra-report-shows-no-stomach-for-bold-action-on-food-poverty-and-obesity (accessed June 2022).
39. Defra (2022) Government Food Strategy. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1082027/government-food-strategy-print-ready.pdf (accessed June 2022).
40. Theis DR & White M (2021) Is obesity policy in England fit for purpose? Analysis of government strategies and policies, 1992–2020. *Milbank Q* **99**, 126–170.
41. Brookes G (2021) Empowering people to make healthier choices: a critical discourse analysis of the tackling obesity policy. *Qual Health Res* **31**, 2211–2229.
42. Watson M, Browne A, Evans D *et al*. (2020) Challenges and opportunities for re-framing resource use policy with practice theories: the change points approach. *Glob Environ Change* **62**, 102072.
43. Jackson P, Rivera Ferre MG, Candel J *et al*. (2021) Comment: food as a commodity, human right or common good. *Nat Food* **2**, 132–134.
44. Ericksen PJ (2008) Conceptualizing food systems for global environmental change research. *Glob Environ Change* **18**, 234–245.
45. Horton P, Banwart SA, Brockington D *et al*. (2017) An agenda for integrated system-wide interdisciplinary agri-food research. *Food Secur* **9**, 195–210.
46. SAPEA Science Advice for Policy by European Academies (2020) A sustainable food system for the European Union. https://doi.org/10·26356/sustainablefood.

Proceedings of the Nutrition Society

https://doi.org/10.1017/S0029665122002841 Published online by Cambridge University Press