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The ontological politics of freshness: Qualities of food and sustainability governance

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Abstract

Freshness is a key feature of contemporary food systems, however its industrial production as a quality of food carries adverse consequences. Accordingly, this paper approaches freshness as a matter of concern. Drawing on extensive fieldwork across sites of food production and consumption in the UK and Portugal, we identify four enactments of freshness. The analysis zooms in on the specific case of plastic food packaging and uses these enactments to consider a series of questions about realities and the relationships between them. Since packaging is an issue that readily overflows to encompass a broader suite of propositions about food, we argue that freshness is a suitable focus around which to assemble hybrid forums to debate future possibilities. Joining a body of recent work that brings relational-materialist sensibilities to bear on sustainability governance, we demonstrate that these ideas are not exhausted by a concern with the ways in which existing ontologies are brought together in policy. To conclude, we suggest that attention to the multiple ontologies of *qualities* complements and extends approaches that focus on *objects* by offering a conduit that brings understandings of markets into discussions of ontological politics.

Keywords

Actor-network theory, economy of qualities, market studies, plastic packaging, sustainable food

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Introduction

This paper considers the ontological politics of freshness, which is both a quality of food and a key co-ordinating principle in contemporary systems of food production and consumption (Evans and Mylan, 2019). Our view in this paper is that qualities such as freshness are never simply observed, rather, they are the outcome of qualification processes which seek to ‘establish a constellation of characteristics, stabilized at least for a while, which are attached to the product and transform it temporarily into a tradable good in the market’ (Callon et al., 2002: 199). It follows that qualification establishes the combination of attributes to be considered both in order to ascertain whether or not food is fresh, and to position freshness favourably within the economy of qualities. Existing research and policy approaches to food production and consumption take freshness as a *matter of fact*. It is viewed as a self-evident category (eliding its historical contingency – although see Freidberg, 2009) and as unambiguously positive (healthy, wholesome, natural). In contrast, we treat freshness as a *matter of concern*. The year-round availability of produce that is qualified as fresh relies on global supply chains and technological interventions. These give rise to adverse social and ecological consequences, including the energy burden of the cold chain and the labor conditions of seasonal agricultural workers. It is not our intention to present or expose the industrial production of freshness as a contradiction or performance that obscures the realities of contemporary food systems (cf. de la Pradelle, 2006; Freidberg, 2009). Drawing on extensive empirical fieldwork in the UK and Portuguese agro-food sectors (Jackson et al., 2019), we take a different approach to the politics of unsettling freshness. We attend to freshness as ontological work, suggesting that it has multiple realities, and that acknowledging these can help interfere in the far more extensively politicised (cf. Mol, 1999) issue of sustainability governance in the production and consumption of food (Evans et al., 2017; Miele, 2011).

Our understanding of the freshness multiple derives from ‘the theoretical sensibilities and methodological habits of relational materiality’ (Lavau, 2013: 417) which suggest reality – what there is in the world – is *done* rather than observed. Reality is thus an effect of practices, which are understood as ‘relations that are heterogeneously material and semiotic, filled with social and technical tensions’ (Law and Singleton, 2014: 380). Since these relations are multiple, so too are the realities or ontologies that they carry. There is a growing body of work that addresses ‘where we are with *politics* now that actor network theory and its material semiotic relatives have reshaped *ontology* (Mol, 1999: 75)’. Specifically, we join perspectives that engage with issues of sustainability governance through reference to these developments (Blaser, 2013; Lavau, 2013; Silva-Castaneda, 2016; Yates et al., 2017). Our analysis extends these contributions in a number of ways. First, where the vast majority of existing studies are interested in water; we offer a distinctive empirical focus on food production and consumption. Second, our emphasis on qualities and qualification offers a conduit that brings contemporary understandings of markets into discussions of objects, ontological politics and sustainability governance (see Gregson et al., 2010; Hawkins, 2011a; Phillips, 2013; cf. Berndt et al., 2020; Rainer, 2021). Third, we note that despite frequent allusion to Annemarie Mol; too little attention has been paid to her 1999 essay *Ontological Politics: A Word and Some Questions*. We therefore suggest that closer adherence to the questions that she poses can help in systematically engaging with multiple realities and the relationships between them. Finally, we demonstrate that the contribution of relational-materialist sensibilities to sustainability governance need not be exhausted by a concern with the terms on which existing ontologies are brought together in policy.

The remainder of the article is structured as follows. To begin, we explore ontological multiplicity and ontological politics in more detail before discussing the empirical materials that inform our analysis. Having mapped out the multiple enactments of freshness that emerged from our observations of how it is done in practice, we use these to consider a series of questions about realities and

the relationships between them. In order to do so, we zoom in on the specific case of plastic food packaging and suggest that this already ‘hot situation’ can be animated further by shifting attention away from the object in question in favour of exploring its relationships with freshness as a multiple quality of food. The core of our analysis is organised around two separate realities of plastic food packaging and in presenting these, we demonstrate how they result from the different ways in which enactments of freshness clash, combine and collaborate with one another. With these in place, we consider a series of questions related to ‘which [reality] might be preferable if there were several on offer’ (Law and Singleton, 2014: 388). We suggest that plastic food packaging cannot be addressed in isolation, arguing that freshness is an appropriate framing around which to assemble a hybrid forum (Callon et al., 2009) to discuss a broader suite of issues and propositions related to how food is produced and consumed. To conclude, we consider the theoretical and practical implications of our analysis.

Freshness, multiplicity and ontological politics

The foundational claim that freshness is not a singular quality of food warrants further consideration. When the UK’s Food Standards Agency revised their guidance on food labelled as fresh in July 2008, they observed:

26. The description ‘fresh’ can be helpful to consumers where it differentiates produce that is sold within a short time after production or harvesting. However, modern distribution and storage methods can significantly increase the time period before there is loss of quality for a product, and it has become increasingly difficult to decide when the term ‘fresh’ is being used legitimately.

27. The term ‘fresh’ can also be helpful when used to identify products that have not been processed [...]

29. ‘Fresh’ is often used in a number of phrases that may have an emotive appeal but no real meaning (e.g. ‘oven fresh’, ‘garden fresh’, ‘ocean fresh’, ‘kitchen fresh’, etc). These should be avoided (FSA 2008)

Freshness emerges in this regulatory context as a mutable term that spans and encompasses multiple meanings, underscoring the basic point that freshness cannot be taken as a matter of fact.

The analysis that follows does not approach the multiplicity of freshness via the complexities of defining it. It is motivated by a concern with the multiple realities of freshness. It will be recalled that relational materialism does not deal in social constructions of reality. It deals in realities that take a lot of work to enact and require widespread co-ordination and recognition across disparate actors¹. For example, while Michèle de la Pradelle’s ethnography (2006) of the Carpentras market in Southeastern France suggests ‘freshness’ is a performance that masks the reality of industrial food relations; it could also be argued that this is a reality that has been skillfully enacted into being by assembling and integrating techniques, materials and concepts (cf. Cochoy, 2007). The practices of disparate actors (vendors, consumers) underpin the stabilization of these associations and thus the maintenance of a reality in which this produce is fresh. The shift from constructivism to ontology entails a parallel shift from potentially unlimited pluralism (and relativism) to a more bounded form of multiplicity (cf. Mol’s, 2002 discussion of the body multiple as ‘more than one, less than many’), in turn mitigating any suggestion that the embrace of material semiotic perspectives has necessarily reactionary political effects.

By the same token, relational materialism does not reduce multiplicity to a matter of perspective. For example, the suggestion that freshness looks different to plant scientists investigating microbial

activity in post-harvest crops, technologists tasked with monitoring and maintaining quality standards across global supply chains, firms who must adhere to regulatory guidelines, and consumers using their senses to assess the freshness of food would miss the point. Perspectivalism suggests that freshness is a singular thing that appears differently – and with varying degrees of accuracy – depending on how and by whom it is viewed. In contrast, relational materialism suggests that ‘realities, representations and the creation of scientific (or other) forms of classification and knowledge’ (Lien and Law, 2011: 68) are all done alongside each other. It follows that freshness does not simply *appear differently* to plant scientists, supply chain technologists, firms and consumers. The emphasis placed on the many and varied ways in which freshness is done (for example investigating microbial activity in post-harvest crops or squeezing food to assess its attributes) means that different practices enact *different realities* of freshness. Accepting that realities generate political possibilities and impossibilities, ontological multiplicity is ‘inherently political’ by virtue of the ways in which different realities are asserted and prioritized (Yates et al., 2017: 4).

Our interest, then, is in ontological politics. The analysis that follows draws inspiration from Annemarie Mol’s 1999 essay in which she identifies a number of different enactments of anemia and then poses a series of questions about ‘the kind of politics that might fit this ontological multiplicity’ (1999: 79). They are as follows:

- *What* are the options?
- *What* is at stake?
- *Are* they really options?
- *How* should we choose?

In the course of addressing these, she also considers a number of additional questions – although less explicitly. They might be posed as follows:

- *How* do different enactments clash with, collaborate and rely on one another?
- *Which* other realities are involved or modulated by these enactments?
- *What* effects should we be seeking?

We suggest that consideration of these questions offers an approach – a method of sorts – for more thoroughly and systematically thinking about ontological politics and sustainability governance. Before applying these questions to the specific case of plastic food packaging, it is necessary to discuss the empirical research – and outline the multiple enactments of freshness – on which our analysis is based.

Research context: Freshness in practice

The research that underpins this analysis was initiated to explore the cultural, environmental and commercial significance of freshness in the UK and Portuguese agri-food sectors². We originally set out to explore the many and contested meanings of freshness, however we quickly discovered that our empirical materials refused to lend themselves to such an approach. We promptly shifted our attention to *how freshness is done* and adapted consequent data collection techniques in order that we went to multiple fieldwork sites (plantations, laboratories, shipping facilities, corporate offices, market stalls, and people’s homes), explored a range of materials (documents, technologies, controversies), and traced associations between empirical sites and heterogeneous phenomena. The aim was thus to understand freshness, its materials and practices, and its ontological multiplicity. A range of qualitative methods were used, including key informant interviews, ethnographic observations, and analysis of company archives. We worked with major retailers (interviewing

technologists, marketers, buyers and category managers) and their supply chains (site visits to farms, distribution centers, processing and packaging facilities, and ports) as well as smaller firms (independent retailers and producers) and the trade associations that represent them. Parallel to this, we analysed secondary materials such as technical reports and media commentary in trade and popular press. We also conducted fieldwork with consumers using a range of qualitative methods, including repeat in-depth interviews, observations of shopping and cooking practices, and video recordings of ‘tasting dinners’ (Jackson et al., 2020).

We have elsewhere described the multiple ontologies of freshness and considered some of their performative effects (Jackson et al., 2019; Truninger et al., 2020). The analysis that follows builds on these arguments and develops them further in the registers of ontological politics. In order to do so, the first step (following Mol, 1999) is to outline the multiple enactments of freshness that emerged from our observations of how it is done in practices. Our data suggest this happens in (at least) four different ways. Suffice to say, any attempt to delineate these enactments must be accompanied by the caveat that there is always significant overlap between them. Nevertheless, our analysis of these data suggests that it is possible to abstract and isolate particular enactments of freshness that emerge across – and through the connectivity between – different empirical sites of ‘production’ and ‘consumption’ (see Jackson et al., 2019). To give examples – or exemplars³ – of each:

One: The quality measurement team within a major UK retailer are doing ‘sensory analysis’ as part of new product development. The use of ‘fresh’ to describe how something tastes is forbidden. While people may be inclined to use ‘fresh’ as a proxy for certain tastes or sensations, it is not itself a flavour. Category technical managers elsewhere in the same company do not – and cannot – measure the freshness of food in terms of its sensory attributes. They measure it in terms of how long perishable produce will last. Two measures are important here: (i) retail residency time - which is the time between harvest and sale, and (ii) domestic shelf life - which is how long it will remain edible after purchase. This is a *temporal* enactment of freshness, and it is staged as a matter of minimising residency time and maximising shelf life for the final consumer. Freshness is measured in days that can be shaved off residency time and given to the consumer as shelf life. Days that can be lost due to ineffective storage in commercial or domestic settings. Days that can be recovered even after they have been lost – for example by putting stale bread in the oven.

Two: A shipment of bananas arrives at a ripening facility in the South of England. A sample of these are selected for quality control and quality assurance exercises where their colour is visually assessed against a chart, their girth is measured using banana callipers, their length with a tape measure, and their temperature with a probe. These are Cavendish bananas – the only variety that can travel well from Central and South America. They were packed when green and then chilled to 13.6°C for their (c. 3 week) journey to the UK by sea. They passed through quality control and assurance checks at a Port on the South Coast of England and were carefully monitored as they moved from the ship to temperature-controlled vehicle that transported them to the ripening facility. On arrival, they enter dedicated rooms to be gently warmed and ‘woken’ up over a c.6-day period. The ripening process is controlled by highly experienced workers – and a bank of computers – who ‘induce freshness’ by releasing ethylene gas and monitoring subsequent progress, adjusting ventilation and temperature (between 13°C–19°C) in the room to ensure that the right number of bananas reach the desired colour stage (yellow/brown) at the required time. This is a *technical* enactment of freshness, and it is staged as a matter of consistency in quality standards.

Three: A consumer in Portugal goes shopping for food. The freshness of produce is a key concern. It matters in terms of the food being healthy, safe and unadulterated. It also matters in terms of how the food tastes. The taste and freshness of food produce is assessed according to how it looks, how it smells and how it feels. When shopping for fish, they check the eyes (they should be shiny) and gills (they should be bright red). If the fish has been filleted, then they

check the scales (they should be shiny) and the blood (it should be red, there should be more of it). They squeeze a fillet to see how firm it is or pick up a sardine by the head to see if its tail stays straight. This is a *sensory* enactment of freshness, and it is staged as a matter of ‘tasting’ food with eyes, noses and fingers (Jackson et al., 2020). Elsewhere, the links between freshness and the senses permit marketers and other personnel within major UK retailers to describe tastes and flavours as ‘fresh’ (despite their colleagues in quality measurement teams not being able to do so). In this reality, freshness is located in the ‘zing’ of a lime or the ‘crunch’ of an apple.

Four: A 1995 ‘recipe ideas leaflet’ produced by an upmarket food retailer in the UK invites potential customers to go on a ‘voyage of discovery’. The leaflet introduces a number of (then) lesser-known (in the UK) vegetables such as baby corn and sugar snap peas, suggesting that the company has travelled to ‘exotic’ locations (Zimbabwe, Kenya) to source the best produce from the best growers. These produce from ‘far away’ places are positioned – among other things (healthy, delicious, convenient) – as fresh. This is a *spatial* enactment of freshness, and it is staged as a matter of geographical origin. In this example, the freshness and purity of produce rests on associations with people and places that are ‘other’ (cf. Domosh, 2003 on racialized discourses of food production – see also Jackson et al., 2019). Elsewhere, proximity rather than distance enacts food produce as fresh. Food that is ‘from the garden’, from a friend’s allotment, or from a local vendor is fresher than food on supermarket shelves.

To see how these enactments combine, clash and collaborate in practice, it is instructive to consider the industrial production of freshness as a quality of food (Freidberg, 2009). This could usefully be interpreted as the use of technical interventions (enactment two) to move organic produce through global supply chains (four) within specific timeframes (one) such that it has specific sensory properties (three) at the moment it reaches the final consumer. This, however, is not our sole concern in this paper. Our main interest is in how the ontological multiplicity of freshness can be used to think through the myriad sustainability challenges confronting the production and consumption of food. It is to this that we now turn.

Plastic food packaging: A tale of two realities

In order to demonstrate the political implications of acknowledging these multiple enactments of freshness, we zoom in on the specific issue of plastic food packaging. There are several reasons for doing so. First, plastic food packaging is a good example of a technological intervention that secures freshness in contemporary food systems on the one hand but carries adverse consequences for the environment and (arguably) human health on the other. Second, until very recently packaging was a taken-for-granted feature of food systems – an unremarkable market device – but growing awareness of the problems associated with the use of plastics (especially single-use plastics that end up in the waste stream) has rendered packaging a political device that is calling publics into being (Hawkins, 2011b; cf. Cochoy, 2004). Plastic food packaging is already a matter of concern and existing regulatory interventions, commercial innovations and consumer responses are understandably focused on the object in question (for example circular economy initiatives, attempts to replace plastics with other materials in the design of food packaging, the rise of ‘plastic-free’ shopping). We take a different but complementary approach that explores the relationships between plastics and the services – such as freshness – that they provide when used in food packaging (Evans et al., 2020; Hawkins, 2018). Having established that freshness cannot be taken for granted, it follows that the role of plastics in securing freshness cannot be taken for granted either.

Our analysis is organised around consideration of two realities, suggesting that different enactments of freshness – and the interconnections between them – have the effect of enacting plastic food packaging in different ways. In the first reality, plastic packaging is germane to the pursuit of greater sustainability in food systems. In the second, it is problematic in terms of wider

sustainability outcomes. These realities are presented with the obvious caveat that their purification and the distinction between them is provisional. The performance of each necessarily depends on the existence of the other and in practice, materials and representations readily overflow their boundaries (cf. Berndt and Boeckler, 2011). We nevertheless hold these realities temporarily stable for the purposes of our analysis – this rhetorical device serves as a useful vehicle through which to consider Mol's questions (1999) about realities and the relations between them – and to ensure clarity of expression. Our presentation of each reality focuses specifically on the questions of what the options are, how different enactments of freshness relate to one another, what is at stake, and how other realities are modulated. We then place these realities alongside one another in order to consider a series of questions about the choices between them.

Reality I

Our field research takes us into the head offices of major retailers, where we engage with several respondents across different parts of each organization. When asked explicitly about freshness, most acknowledge it as a vague term that stands in for lots of other things such as taste, safety or provenance before invoking colleagues – technologists and technical managers – who would have 'much firmer ideas'. Following the suggestion that we really needed to speak to these people, we do precisely that. Here we encounter practices that enact freshness as a scientific fact and something that can be measured. While measurement can relate to the composition of food – for example, the sugar content of fruit and vegetables (measured using brix refractometers) – it ultimately relates to time. For example, one respondent explains that freezing bread extends freshness in terms of how long it remains edible but 'shaves a couple of days of freshness off' due to deterioration in the composition of the bread ('it has to do with the starches'). Freshness is a matter of maximising how long produce will remain in a desired state and in this reality – forged by collaboration between temporal and technical enactments – packaging is a good thing. It is a barrier that protects food from outside interference, especially from elements that may shorten the shelf-life of produce. These ideas are captured in the following field note:

Today I learnt about Modified Atmosphere Packaging (MAP). It involves alterations to the amounts of oxygen, nitrogen and carbon dioxide inside the packaging. It changes the pace of bacteria and mould growth and how quickly the produce inside goes off. In addition to 'pumping' and sealing particular mixtures of gases, this is also done by using permeable films that mediate the transfer of gases in and out of the packaging (which is essential in the case of produce that 'breathes'). A related development is the use of pads (inside the packaging) that absorb the ethylene that gets released as food ripens...effectively slowing down the process of ripening and rotting.

While temporal and technical enactments of freshness dominate in this reality, sensory and spatial enactments are also present. The technical ingenuity that supports the temporal enactment of freshness also underpins the delivery of particular sensory properties of food (how it looks, its texture). For example, high levels of oxygen are used inside MAP to ensure that meat is a bright red colour. Similarly, spatial enactments of freshness are manifest in – or on – packaging whether in the form of information about country of origin or symbolic representations of 'unspoilt' places. This recalls the observation that 'packaging has the incredible virtue of being able to teach us more about the content it conceals than the content can do by itself. It gives information that no sensory experience ever could, such as details of its composition and origin' (Cochoy, 2011: 23).

In this reality, however, sensory and spatial enactments of freshness often clash with technical and temporal enactments. Issues surrounding the sustainability of food production and consumption are at stake within these tensions. This is a reality in which packaging supports a number of positive

outcomes such as improved food safety and the minimisation of food waste. The potential that exists for negative outcomes stems not from the packaging itself but the ways in which people use it. When our field research takes us into people's homes, we observe people removing produce from plastic packaging as soon as possible out of concern that it is 'pumped full of gases' and in order to 'let the food breathe'. One respondent – an environment manager for a major UK retailer – explains that consumers taking produce out of the packaging 'because they think that's what freshness is' is a real problem, both in terms of wastage (cf. White and Lockyer, 2020) but also customers complaining that produce does not last as long as they expect it to.

When freshness and packaging are enacted in particular ways, so too is nature (cf. Lien and Law, 2011). The use of a synthetic material and modified atmospheres to artificially prolong the life of perishable food intuitively seems unnatural. It is human intervention in a 'natural' process – the ripening and decay of food – that is hard to reconcile with familiar understandings of what nature is. In this reality, however, the division between nature and culture is redone through practices that are both material and representational such that nature emerges as something quite different (Haraway, 2003). Food is something lively and sentient (Jackson et al., 2019) that 'breathes' or 'respires' and so the technological management and extension of shelf life requires intervention that works alongside these natural processes. For example, when freshness is done through modified atmosphere packaging, great emphasis is placed on using *only* natural atmospheric gases. More generally, this is a reality in which 'doing freshness' involves keeping food in its most natural state for as long as is possible. Wilk's (2006) analysis of bottled water is instructive for this apparent contradiction. Wilk observes that while the market for bottled water has drawn extensively on images of natural sources, most consumers in rich countries would be terrified to actually drink water straight from a mountain stream without reassurance that it is safe. While nature can be appealing, it is also wild and dangerous. Faced with this ambivalence, technological interventions such as bottling water can strip nature out, purify it and put it back in such that it is under control and predictable (for example, uniform and regulation mineral content). By this point, nature has become something else. A similar process can be observed in the technical enactment of freshness. For example, a major Portuguese retailer offers a '100% freshness guarantee' to their consumers, asserting that they are demanding 'by nature, even with what comes from nature'. Freshness is here a matter of uniformity and consistency in quality standards and in this reality, food packaging helps to 'purify nature or at least reassure of its purity' (Wilk, 2006: 310). While meanings and representations play a crucial role in these enactments of nature, the role of scientific and technological intervention cannot be overlooked.

These enactments of freshness, packaging and nature also modulate economic realities. Accepting that qualities provide the basis of economic competition (cf. Callon et al., 2002), the aforementioned Portuguese retailer is not alone in seeking market advantage through reference to the freshness of the produce that they offer. For example, the entirety of the banana supply chain for a major UK retailer is organized – highly organized – around the delivery of specific quality standards and shelf-life for the final consumer. The process of evaluating bananas begins on the plantation (where they are measured and monitored at various stages in the growth cycle) and in post-harvest packing facilities (where those that meet the relevant quality standards are placed in plastic bags, ideally in bunches or 'hands' with 4–6 'fingers'). The bags bear the retailer's logo alongside other information (a barcode, Rainforest Alliance certification *etcetera*) and a statement that the produce has been 'expertly selected for freshness and quality'. The bagged bananas are checked again at various points in the UK, including the ripening facility where bananas that do not make the grade are taken out of the bags and placed 'loose' on another line. We are told that 'nobody wants to grow a discounted banana' which is why so much effort is put into upholding these standards. A 'secondary' market is found for the loose bananas. While some may be diverted

to other production processes (baby food, smoothies), many will end up in greengrocers or on market stalls. In this reality, the bagged or packaged bananas are not only better, they also last longer. It is a world of 'industrial freshness' and it promises quality food that is less likely to be wasted. The ghost at the banquet is that for this to exist as an option for some, it must surely not exist for others. It implies 'secondary' consumers eating lower quality produce to save it from wastage. Before exploring this tension further and thus whether or not this reality is *really* an option, let us consider another reality.

Reality 2

Our field research takes us into 'traditional' market halls where we engage with traders who specialize in the sale of meat, fish, and fruit and vegetables. Freshness is done very differently here. Many of the practices that we encounter stand in direct contrast or opposition to the practices of industrial freshness. This is a world of short food supply chains where, for example, traders go to a farm on Thursday to get food that was picked earlier that day to sell on Friday. It is a world where the quality and freshness of produce is assessed without regulatory (labels) or technological (temperature probes) devices. Freshness is a matter of knowing food and minimizing intervention. In this reality – forged by the intersection of sensory and spatial enactments – plastic packaging is a bad thing. It is a barrier that obscures and obfuscates, preventing tactile engagement with food. This is confirmed by our ethnographic observation of a UK consumer attempting to select fresh fruit from the supermarket shelves:

She goes to the display of organic bananas and picks up the bags to inspect the produce inside. She wants some that are not too speckled. She is happy when she finds some that look ready to eat with others only now starting to turn. These will last her about one week. She has to turn the bag around and around in an attempt to see the bananas. It is difficult because there is so much writing and patches of green ink on the packaging. She tries to examine the ends of the bananas through the bottom of the bag but gives up and places these in her trolley.

Even with packaging in the way, we encounter people trying to assess the freshness of produce by handling it. We witness thumbs running along green beans through a thin plastic layer to feel how crunchy they are, hands squeezing figs through hard plastic to see how soft they are, and oranges grabbed through red netting to feel how big and juicy they are. It is hard not to conclude that when freshness is done in this way, it would be better that plastic packaging is not there. In the absence of packaging, other surfaces can reveal information about 'the content' (cf. Cochoy, 2011). For example, loose fruit and vegetables on market stalls are laid out in separate crates - one for new potatoes, one for broccoli, and so on. Each crate displays a handwritten card detailing what the produce is, its price, and where it comes from. Similarly, when market traders buy carcasses of meat – rather than the 'cuts' found on supermarket shelves – they come with a 'passport'. Putting these passports on display provides traceability to the date and the place of slaughter.

While sensory and spatial enactments of freshness dominate here, temporal and technical enactments are also present. For example, the assessment of freshness narrated above is a technical enactment – albeit one that does not rely on scientific knowledge and attendant apparatus (such as temperature probes). Similarly, the imperatives of maximising how long food will last are important in this reality, however this temporal enactment does not rely on technological intervention or the use of plastic packaging. This is a reality in which fish sellers maximize shelf-life for the final consumer by going straight to agents at dockside auctions to cut out the wholesale stage. Similarly, we observe consumers preserving potatoes by putting them in heavy duty paper sacks or placing onions in stockings and storing them in the shed. When we observe people removing fresh produce from

plastic packaging, it is very often in an attempt to make it last longer. We witness coriander (cilantro) wrapped in a wet tea towel and then stored in a vegetable drawer in the fridge and are told that doing this makes the produce fresher than when it was purchased. This is a practice that has been passed down through family generations and it is instructive to note that – in common with the technical enactment of freshness (but again, drawing on different or ‘non-scientific’ forms of knowledge, cf. Lien and Law 2011: 68) – it carries the promise of adding days of freshness rather than viewing freshness as something that inevitably gets lost over time.

The enactments of freshness that dominate in this reality perform nature in particular ways. Here the boundaries between nature and culture are clearly drawn. Food that has been subject to excessive intervention is not considered fresh. For example, the use of temperature-controlled logistics to move food through global supply chains means that produce on supermarket shelves in unseasonal, unnatural and not *really* fresh. In this reality, freshness is about minimising the time and distance between food being harvested and food being eaten. Produce that lasts longer than is considered ‘natural’ – for example, bread that is still not mouldy after ten days – is viewed as overly processed and thus not fresh. In contrast to the first reality, then, plastic packaging is an unnatural intervention in natural processes. This is not a world in which plastic packaging helps food to breathe. It is a world in which plastics cause fresh produce – for example bagged salad leaves – to ‘sweat’. More pointedly, this is a world in which plastic packaging pollutes nature. In addition to polluting marine environments and ecosystems, the use of plastics in food packaging raises concerns about contaminating the produce it contains (cf. Glausiuz, 2014), in turn polluting the bodies that ingest it (cf. Mol, 2008). Growing scientific consensus regarding the deleterious environmental impacts of plastics notwithstanding, these enactments of nature – particularly as it pertains to food – rely more heavily on representational than material practices.

When freshness, packaging and nature are performed in these ways, economic realities are also modulated. Our field research takes us into the offices of the National Market Traders Federation (NMTF) where we learn that the recent revival of ‘traditional’ markets in the UK is linked to increasing awareness of ‘what people put in their mouth’. This recalls well-established claims (for example Morgan et al., 2008) that the growth of ‘alternative food networks’ can be attributed to people becoming suspicious of industrial food production and wanting to learn more about where their food comes from. The recent politicization of plastic packaging creates economic opportunities for traditional markets. For example, we are told that Cambridge market recently took the decision to stop using any plastic packaging. Since plastics were already tangential to the enactment of freshness on market stalls, market traders were able to respond quickly to changing consumer demand for ‘plastic free’ shopping. These enactments of freshness, packaging and nature also modulate economic realities for actors in ‘mainstream’ food systems – giving a glimpse of the overflows between these realities. For example, many supermarkets are trialling ‘packaging free’ options in their stores just as many food manufacturers are switching to packaging made from other materials (bioplastics, cardboard). In our field research we witness major suppliers becoming anxious about Modified Atmosphere Packaging, precisely because it may be seen as unnatural and thus akin to trying to sell a ‘dirty old diesel car’. In the context of these anxieties, a switch to ethylene absorber pads is preferred.

Returning to the idea that qualities of food provide the basis of economic competition, it is instructive to reconsider the unpackaged items that do not meet the specific quality standards of supermarkets and thus find their way into a secondary market (a further glimpse into how these realities overflow). This world of local retailers and smaller traders is the secondary market in question and observing it, it does not seem to be characterized by substandard produce. There is much greater variety here, for example up to 40 types of potatoes on market stalls compared to 3 or 4 in supermarkets. We learn that supermarkets rely on specific varieties that are well suited to their supply chains and retail practices (cf. Smith et al., 2014). While produce that is ‘secondary’ in these

processes does indeed end up on market stalls, there is no reason to assume that the myriad other varieties available are also rejects from industrial food systems or that this is a world of produce that does not last. Indeed, technical and temporal enactments of freshness are contested in this reality. In contrast to a view that packaging maximises shelf life for the final consumer, we learn that shelf-life is optimised to give supermarkets the widest window in which to sell their produce. Relatedly, when fresh produce is packaged, there is very often a mismatch between the quantities in which it is made available and the quantities in which people need it (e.g. multipacks of fruit and vegetables). This passes the burden of surplus onto consumers, increasing the risk of wastage. In this reality, then, people can access a greater variety of loose produce in the quantities that they need. In the absence of packaging, people are closer and more connected to food. The ghost at the banquet in this case is the ambiguity of locality (cf. Forney, 2016). For example, produce that is sold through ‘local’ merchants is not necessarily food that originated in the same locality (there is a lot of Spanish broccoli on British market stalls). Similarly, there is growing evidence that ‘local’ does not necessarily mean ‘more sustainable’.⁴ Finally, there are questions about inclusion and exclusion in local food spaces (cf. Slocum, 2007) as well as uneven distributions of knowledge and willingness to engage with food (Truninger et al., 2020).

Choosing

A key issue for ontological politics is the matter of choosing between realities if and when there are several on offer (Law and Singleton, 2014). The realities outlined above co-exist in the present. In the first, temporal and technical enactments of freshness combine to enact plastic packaging as a good thing. In the second, sensory and spatial enactments of freshness combine to enact plastic packaging as a bad thing. With these realities in place, we are in a position to ask three further questions about the relationship or choice between them.

The first question is ‘what effects should we be seeking?’ At one level, it is perfectly sensible to insist that a move away from single-use plastics in food packaging should be a priority. In which case, the second reality is preferable to the first. The trouble with this suggestion is that it makes little sense to think about plastic packaging in isolation – without broader consideration of the produce it contains or its role in the co-ordination of food production and consumption. There are necessarily trade-offs, conflicting interests and unintended consequences such that there is as yet no consensus that this is the challenge to be addressed at all costs. Our discussion of plastic packaging therefore very quickly gave way to a more general set of propositions about food and sustainability. The first reality is a world of industrial food production that promises both quality and consistency as well as longer shelf-life and reduced wastage. The second is a world of more local food production that promises both quality and variety as well as the various benefits that are brought about through closer connections between people and the food that they eat. We suggest, then, that the question of what effects we should be seeking should be asked of food itself and the systems that underpin its production and consumption. While this is necessarily abstract and nebulous⁵, attention to the ways in which freshness is done provides a way to think about these issues, with implications for governing plastic packaging (specifically) as well as food sustainability (more generally).

It will be recalled that a good deal of current effort, attention and activity is in fact focused on plastic food packaging in isolation. At this juncture, then, it is worth emphasising our argument that a focus on freshness (a quality) offers a distinctive approach to this existing matter of concern (an object). This shift in emphasis is in many ways a straightforward inversion of the perspectives from which we have taken the bulk of our inspiration. Notably, Hawkins and her collaborators (2015) show how plastic bottles re-organize qualities of water – rendering it a private and portable commodity rather than a public good. Similarly, Cochoy (2004) has shown that packaging is a surface

on which political controversies can play out – for example, corporations and regulators vying for attention to enact the contents in particular ways (public health warnings that until very recently competed with positive brand imagery on cigarette packaging). Conversely, our analysis suggests that qualities of food (the contents) help enact what plastic food packaging is, what kind of an issue it is, and what should be done about it. It follows that a focus on freshness as a multiple quality of food can animate understandings of plastic food packaging as political material.

The second question is whether or not they are really options. While there are very clearly elements of each reality already in circulation, it seems unlikely that one alone could be chosen, asserted and prioritized as an approach to sustainable food systems. There is considerable overlap between these realities, both in terms of material flows (produce discarded in the first reality finding a market in the second) and the diffusion of ideas (critical experimentation in the second influencing economic activity in the first). Viewed as such, neither is really an option in isolation. Further, the promises of each reality must be treated with a degree of caution. For example, the promise of high-quality food that is less likely to be wasted rests on the ability to dispose of produce that does not make the grade. If this ends up as waste or else reproduces social inequalities, there are absolute limits to the first reality as an option. Similarly, the promise of more ‘embedded’ food systems would most likely necessitate a re-localization of food production. If this results in produce that is at odds with competing food system imperatives – health, animal welfare, taste, sustainability, choice – then there will be absolute limits to the second reality as an option.

Assuming for a moment that these realities – at least in some form – might be genuine and competing options, the final question is one of how to choose between them. While a definitive answer to this question lies beyond the scope of this article, it is becoming increasingly clear that sustainability challenges require new and expanded democratic processes that not only bring objects into politics (Latour, 2004) but are also equipped to deal with their overflows. We explore these ideas further in the conclusion.

Conclusion

This paper has approached the significance accorded to freshness in contemporary food systems as a matter of concern rather than a matter of fact. It has explored how ideas of ontological multiplicity and ontological politics can be brought to bear on sustainability governance. The analysis identified four different enactments of freshness – technical, temporal, sensory and spatial – and used these to consider a series of questions about realities and the relationships between them. We presented two realities of plastic food packaging, suggesting that they result from the ways in which different enactments of freshness clash, combine and collaborate. Placing these two realities alongside one another, it became clear that the distinction between them is provisional and that a focus on the issue of plastic food packaging readily gives way to a broader set of questions and propositions related to the sustainability of food production and consumption. Viewed as such, plastic food packaging is a good example of how objects can overflow the bounds of existing categories and regulatory frameworks.

One suitable mechanism for responding to and engaging with these overflows is a hybrid forum (Callon et al., 2009) that brings together the full range of concerned actors – and a spectrum of relevant knowledge (technical and lay) – for the purposes of discussion, deliberation and collective experimentation. Our analysis suggests that freshness is an appropriate matter of concern around which to assemble a hybrid forum to discuss alternative options and future possibilities, not only for plastic packaging, but for greater sustainability in food production and consumption. A focus on freshness as a (multiple) quality of food and a key coordinating principle in the economy of qualities (cf. Callon et al., 2002) brings the dominant practices of current food systems into sharp relief. It invites consideration of unintended consequences – such as the adverse social and environmental

impacts of freshness as an industrially produced quality of food – as well as the tensions inherent in potential solutions. For example, there might be a clear rationale for promoting frozen produce over fresh on the grounds that it can be safer, more nutritious, taste better, and help reduce food waste. Conversely, this proposition would most likely be subject to concerns about increased packaging waste as well as the potential for greater energy use along the supply chain and in domestic kitchens. Through open discussion of potential conflicts and trade-offs, a hybrid forum can help to identify options that minimise negative social and environmental outcomes.

Forms of governance that embrace dialogue between different realities of freshness should not be seen only as a matter of giving voice to marginalised ontologies (cf. Lavau, 2013 on ontological cleaving, Yates et al., 2017 on ontological conjectures). While this is no doubt important, our analysis suggests that blanket advocacy of ‘pre-industrial’ freshness would be problematic. Local and seasonal produce cannot be assumed to be any fresher or more sustainable than industrial produce. By the same token, it is possible that industrial freshness could be deemed beneficial in terms of food quality and sustainability outcomes, at least in relation to some foods (the existing consensus around frozen peas spring to mind). These propositions and options are necessarily a matter to be addressed by the range of actors and knowledge that are assembled in a hybrid forum. Perhaps more importantly, we suggest that assembling a hybrid forum around freshness offers an opportunity to look beyond existing ontologies and to ask wide-ranging questions about food itself as well as the systems that underpin its production and consumption. For example, many other characteristics and attributes of food – ranging from flavour and provenance to convenience and consistency – are emphasised in different enactments of freshness. It is entirely possible that qualities other than freshness might emerge as new priorities for what food systems should ultimately deliver. In which case attention must also be paid – along the lines taken in this paper – to the ontological multiplicity of these qualities, to valuing practices, and to the consequences of the food that people eat (cf. Heuts and Mol, 2013; Mol, 2008). Viewed as such, a hybrid forum may also be a space for collective experimentation with new – as yet unknown – realities.

To end, we wish to signal the broader theoretical implications of our analysis beyond sustainability governance. In contrast to the extant literature that focuses on the multiple ontologies of *objects* and views qualities only as an emergent effect of how these are enacted⁶, this paper has focused on the ontological multiplicity of *qualities* and explored their own emergent effects. We recognize that the distinction between objects and qualities might be considered unnecessary or overstated. Indeed, both are enacted through practices that are heterogeneously material and semiotic, both have performative effects that generate political possibilities and impossibilities. We nevertheless maintain the distinction insofar as we understand qualities as the outcome of qualification processes (following Callon et al., 2002). In this view, qualities are inherently unstable – both in terms of the constellation of characteristics or attributes that constitute a quality such as freshness and the temporary alignment that positions these favourably within the economy of qualities. In contrast, objects are necessarily more stable and durable. This is not to deny their multiplicity, rather, it is to emphasise the ‘thing-ness of things’ (Bennett, 2010). For example, no matter how plastic food packaging is enacted or how transient and disposable it is in cultural and economic life; there is no escaping its durability in terms of the time it takes to decompose or its deleterious effects on the environment and ecosystems (Liboiron, 2016). Having already made the case that qualities are a useful mechanism for shaping the terms on which objects and their overflows are brought into politics, we suggest that the approach to qualities taken here also offers a conduit to link understandings of markets to the literature on ontological politics. Future studies might usefully focus on the extent to which qualities can be conceptually disentangled from objects or else developing greater dialogue between approaches to markets and approaches to politics that share common foundations in the theoretical habits of relational materialism.

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Notes

1. See Law and Singleton's (2014: 388) discussion of the difference between the real Napoleon and those who proclaim themselves to be Napoleon. The real Napoleon is generally practised as such 'by millions of other people' whereas the others are 'not so enacted'.
2. Funded by the UK's Economic and Social Research Council [ES/N009649/1].
3. For reasons of brevity, the discussion here is not exhaustive in terms of drawing out empirical nuance or demonstrating how these different enactments are manifest across empirical sites (although see again Jackson et al. 2019 for more detail).
4. For example, tomatoes grown in the UK using polytunnels may have a higher environmental impact than tomatoes grown under sunlight in Spain and imported to the UK.
5. Techniques such as Lifecycle Assessment (LCA) are intended to make the system-wide implications less nebulous (Freidberg 2013).
6. See for example Lien and Law (2011: 370) on the 'slipperiness' of salmon.

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