Fresh is best?

New perspectives on sustainable food systems
This important report questions the use of the word ‘fresh’ in relation to food.

The term can be misleading and meaningless. Which of course is why marketing professionals make varied use of it. Our food production system is very sophisticated and technology driven. It can generate waste, use too much water and energy, and exploit workers. Looking fresh and feeling fresh often tell us nothing about a product. Indeed some foods carry a premium on price by being mature.

By law, food on sale must be safe. No law can be used for ‘fresh’, which is why it may be best avoided. Food that is ‘put to sleep’ in order to travel and ‘woken up’ with a puff of gas to induce the freshness is perfectly safe to eat – a month after harvest. And the banana story fits perfectly with my visit to a ripening store in Birmingham over 30 years ago.

While a case could be made for the food industry to cease using the word, the key message from this research is to focus on ‘how freshness is done’ and to trace its consequences across the food system. Understanding the many and varied ways in which freshness is currently done reveals new insights into how it might be done differently, and better. The lessons of the research on which the report is based should be of interest to everyone involved in producing a safer and more sustainable food system.

The Right Honourable The Lord Rooker PC

Jeff Rooker was Labour MP for Birmingham Perry Barr (1974-2001). He was created a life peer in 2001 and served as Chair of the Food Standards Agency (2009-13).
Executive summary

Freshness is a key co-ordinating principle in contemporary food systems. The requirement and expectation for food to be fresh shapes the geographies of primary production (what is produced and where), the technological organisation of supply chains, retail strategies, and patterns of consumption.

When applied to food, freshness is almost universally seen as a good thing. It conjures images of produce that is wholesome, natural and unadulterated. Food that tastes good and is good for us. Its importance may seem obvious, driven by the need to provide healthy, safe and nutritious food that satisfies dietary needs and preferences. However, the year-round availability of fresh produce relies on processes that are anything but natural. These include increasingly globalised supply chains and technological interventions such as packaging and climate controlled logistics (Freidberg 2009). This is known as the paradox of industrial freshness.

Securing freshness in industrial food systems carries significant environmental and social burdens. These range from the working conditions of seasonal agricultural labourers to the demands placed on energy, water and other resources.

This report derives from a project that was initiated to explore some of these tensions. The work was carried out by teams at the Universities of Sheffield (UK) and Lisbon (Portugal). It focused on fruit and vegetables, chicken, and fish. The research involved interviews and site visits with major food retailers in both countries, going back along their supply chains to explore how freshness is secured from farm to fork. It also involved research with smaller producers and retailers located in traditional or ‘alternative’ food networks. We worked closely with households and consumers using a range of in-depth qualitative methods to understand how freshness features in domestic food practices (shopping, cooking and disposing of food). We also undertook a series of ‘tasting events’ in which we observed and recorded participants preparing and eating meals together.

Our approach focuses on the ways in which freshness is done, paying attention to the role of knowledge, practical activities, organisational strategies, and technologies. We suggest that ‘freshness’ is done in lots of different ways, each requiring a lot of effort and co-ordination. The various ways in which it is done have differential consequences for the social and economic organisation of food systems.

Rather than taking ‘freshness’ for granted, our research demonstrates the importance of questioning what it actually is, as well as its cultural and commercial significance. Freshness can be lots of different things – often standing in for other qualities of food – and it is not necessarily the case that ‘fresh is best’.

The report ends with consideration of the need to reorganise food systems to deliver better health and sustainability outcomes. We suggest that understanding of how freshness is done can help identify levers to do it differently, exemplifying new ways of thinking about large-scale changes in how food is produced and consumed. Particular attention is paid to the importance of co-ordinated action and the potential to transfer learning from the case of freshness to other qualities of food.

Paying attention to the contingency and variability of qualities such as ‘freshness’ opens up new ways of thinking about and promoting greater sustainability in the production and consumption of food.

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Freshness and food systems

Freshness is a key feature of contemporary food systems. To understand its significance, you need only look at what is important to consumers. Market research suggests that freshness is one of the most important things that consumers consider when buying food. A recent survey of US consumers concluded that everyone likes the terms ‘fresh’ and ‘farm fresh’.

Across the board – young, old, liberal, conservative, wealthy, poor – these terms ['fresh' and 'farm fresh'] are viewed overwhelmingly positively.

Graph 1: Morning Consult (2018) Consumer trends in the food and beverage industry
Do each of the following words or phrases, commonly found on food or beverage products, make you more or less likely to buy the product?

The same applies in Europe where surveys show that around two-thirds (68%) of citizens are concerned about the quality and freshness of food. This is higher than those who were concerned about GM food (66%) or the welfare of farmed animals (64%). Concerns about the quality and freshness of food are highest in eastern and southern Europe and lowest in northern Europe.

European concerns about the quality and freshness of food (Eurobarometer 2010)
Freshness and sustainability

While freshness is important and generally considered a good thing, there are several unintended consequences of securing freshness in food systems. Many of these are problematic in terms of social and environmental sustainability.

1. FRESHNESS AND ENERGY
The year-round availability of ‘fresh’ produce in contemporary food systems is reliant on cold chain technologies. These use enormous amounts of energy. Increasingly, cold storage technologies are being used to sell as well as distribute fresh produce. Orange juice that is considered fresh (‘chilled’ and ‘not from concentrate’) has triple the carbon footprint of ‘from concentrate’ orange juice sold at ambient temperature.

2. FRESHNESS AND WATER
What we eat and where we source it from creates a number of water-related risks. The supply of fresh fruit and vegetables to the UK requires 550 million m$^3$ of fresh water each year. 76% of this is drawn in production overseas, often in water-stressed areas.

3. FRESHNESS AND WASTE
Fresh produce is at constant risk of wastage from primary production to final consumption. Consumers often purchase excessive fresh produce in order to ‘eat properly’ but then struggle to use it in time. In the UK, over two million tonnes of fresh produce is wasted each year in the supply chain alone. Annual financial costs are estimated at between £400-500 million.

4. FRESHNESS AND AGRICULTURAL LABOUR
Over the last 40 years there has been a rapid expansion in the industrial production of fresh fruit and vegetables. These desirable, and often expensive, foods are reliant on invisible and undervalued seasonal labour. The intensive production of fresh produce in the Mediterranean relies on labourers from Eastern Europe, North Africa and Latin America. These workers face precarious employment, exploitation and social exclusion.

A MATTER OF PERSPECTIVE?

Freshness is many things to many people. It is different for 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 (and perhaps labels) to assess the edibility and attributes of food.

It is therefore tempting to suggest that freshness is a matter of perspective. It appears differently – and with varying degrees of accuracy – depending on how and by who it is viewed. Approaching freshness in this way suggests that there is a right answer to the question of 'what is freshness'?

NOT SEEING CLEARLY?

If the industrial production of freshness relies on processes that are anything but natural, the implication is that consumers have been tricked into seeing things that aren't there. What they think is fresh isn't really fresh. 'Freshness' is therefore seen as a representation that masks reality. It is often claimed that consumers are susceptible to this clever marketing trick because they are disconnected and alienated from the food system. Our research suggests that consumers are not quite so ignorant of the origins of their food nor are they so easily duped.

In any case, there is no way to conclusively determine what freshness really is. It is far more important to ask how is freshness done? And what are the consequences? By embracing the multiple ways in which freshness is done and exploring the different effects across the food system, it becomes possible to think creatively about the task of fostering greater sustainability.

DOING IT

Our approach stresses that freshness is multiple. This means that it isn't a single thing that exists 'out there' to be discovered. And so rather than focusing on the different views that different individuals have of it, we focus on the different practices through which freshness is done. These practices certainly include scientific and other forms of knowledge about what is and is not 'fresh'. However, they also include practical activities and organisational strategies for assessing freshness (for example quality control checks) and maintaining it (for example streamlining supply chains).

This requires a range of different materials such as preservation technologies or devices for 'measuring' freshness (for example temperature probes and brix refractometers that assess sugar content).

The crucial point is that freshness is not revealed through these practices, it is the result of them. And since these practices differ, so too does the answer to the question of what freshness really is. Freshness doesn't appear differently to plant scientists, supply chain technologists, firms and consumers. It is something different. Put another way: freshness has multiple realities.

This is not to say that 'anything goes' or that freshness can be whatever anybody wants it to be. To the contrary, these realities take a lot of work. They cannot be conjured out of nothing or socially constructed on a whim. These realities require the skilful integration of techniques, materials, concepts and knowledge. Importantly, they require widespread recognition and acceptance. It is the difference between the real Elvis and those who claim to be Elvis but are then treated for a psychiatric disorder. The one was real because he was generally acknowledged as such by millions of people, whereas the others are not. It follows that industrially produced food can really be fresh for as long as producers, consumers and regulators continue to practise this reality.

The reality of the different (‘more than one, less than many’) ways in which freshness is done can be located in their effects. These effects can be economic (for example, competitive advantages for different firms), social (for example the identities that consumers can present), and environmental (the resources required to practise freshness in particular ways).

Sources: Mol (2002), Law and Singleton (2014)
Doing freshness

Our research suggests that freshness is done in at least four different ways. Each of these ‘enactments’ comes with a distinct understanding of what freshness really is.

SENSORY
In this enactment, freshness is a matter of taste and quality. Food that is fresh tastes good and delights the senses. It is juicy, it is crunchy, it is cold. It is full of flavour and it is at its best. The freshness and quality of food is assessed not only by how it tastes but also by how it looks, how it feels, how it smells – and even how it sounds!

TECHNICAL
In this enactment, freshness is a triumph of organisational and logistical ingenuity. Freshness is a matter of consistently delivering food that meets the desired quality standards and making it available in its optimal state (for example ripeness, remaining shelf life). Doing freshness involves technological intervention and assessment, complex algorithms, understandings of markets, and knowledge of food produce.

TEMPORAL
In this enactment, freshness cannot be used to describe how something tastes. Fresh food is perishable and so freshness relates to how long it lasts. Doing freshness involves minimising the time between harvest and sale (residency time) and maximising overall shelf life – the amount of time that the final consumer has to eat it. Freshness is measured in days rather than sensory attributes.

SPATIAL
In this enactment, freshness relates to the geographical origin of produce. Typically, freshness is a matter of proximity. Food that is straight from the earth, from a friend’s garden, is local or from a trusted supplier is fresh. However, there are also associations between freshness and ‘exotic’ places and flavours that are thought to be in some way ‘authentic’.

EFFECTS
There are many relationships between these different enactments. While they very often stand alone, they can also co-exist with each other in different combinations. Sometimes these relationships are harmonious, sometimes they are not. The different ways in which freshness is done creates different effects and outcomes. These have consequences for the social and economic organisation of food systems. For example:

When temporal and technical enactments combine, freshness is an industrially produced quality of food. The result is the year-round availability of produce that does not vary wildly in its quality standards. These arrangements have consequences in terms of sustainability. For example, farmers are required to grow produce that meets certain specifications and food that does not meet these is at risk of being wasted.

Spatial enactments are pronounced in the associations between freshness and food that is local and seasonal. This strengthens the competitive advantage of small-scale producers and retailers emphasising their differences from their competitors. These include a shortened time period between harvest and sale, a disregard for cosmetic appearance, and increased customer care. It also allows consumers to express their superior knowledge about food, good taste, and biographical origins in places where ‘fresh’ food comes from.

Sensory enactments are prevalent at crucial junctures when ‘freshness’ is at stake. These include moments where temporal enactments are also brought into play. For example when the edibility and safety of food needs to be assessed before preparing and consuming it or throwing it away. Notably, they feature when selecting produce for purchase. The result can be a sense of ‘togetherness’ for consumers – with fellow consumers, with merchants, and even with food itself.

Tensions between different enactments come to the fore when freshness is done as natural and authentic. For example, the processing and packaging of foods might adversely affect their flavour, while also ensuring that they remain safe and edible for longer. Depending on how these tensions get resolved, the results might include reductions in food miles but heightened food safety risks or vice versa.
Go bananas

To illustrate some of these ideas, let’s take the example of bananas.

Most bananas consumed in the UK are produced in Central and Latin America. They are not ‘fresh’ when they are harvested. Freshness is a matter of getting good quality bananas to the final consumer at exactly the right stage of ripeness. This takes a lot of time, involves a lot of work, and requires technological intervention as well as co-ordinated action across the whole supply chain.

Bananas are grown all year round. They are harvested when they reach the required width. This takes 10-13 weeks. Any earlier, they won’t be big enough. Any later, they will be too ripe when they reach the UK. Once harvested, they move quickly to the pack-house. They are cleaned, assessed, cut into bunches and categorised according to client requirements. Bananas are sprayed with fungicide then labelled and packed. The packed fruit is taken to port and ‘put to sleep’ in refrigerated containers (at 13.6°C).

Shipping to the UK takes around 16-20 days. They arrive in the UK and undergo quality control and assessment checks. From the docks, they are taken in temperature-controlled vehicles to a ripening facility. They enter dedicated ripening rooms to be gently warmed and ‘woken up’ over a six-day period. The ripening process is controlled by highly experienced workers using a bank of computers and specialised software.

Freshness is ‘induced’ by releasing ethylene gas and monitoring subsequent progress, adjusting ventilation and temperature to ensure that the right number of bananas reach the desired colour stage at the required time. Quality control and assessment checks are done before dispatch. The bananas are then transported to the retailer, where they spend no more than 2-3 days ripening in store. This means that they are at optimum freshness (ripeness and quality standards) by the time that they reach the final consumer.

Foods are increasingly sold ‘with a story’ (Freidberg 2003). These stories differentiate one product or brand from another in order to secure a price premium. This is challenging in the case of bananas where the product is largely indistinguishable between brands or place of origin. One breed (Cavendish) is the ‘industry standard’, selected for its ability to withstand long-distance transportation and refrigeration without deteriorating. Prices are standardised across the sector, apart from a small premium for Fair Trade bananas. Companies who put extra care into delivering fresh bananas might seek to distinguish themselves from competitors. But communicating these differences to customers is far from straightforward, especially when packaging is minimal.

Freshness is a bit of a misnomer for produce like bananas that has spent 21 days on a boat.

UK-based representative of the banana industry

SOLD WITH A STORY?

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UK-based representative of the banana industry
They’ve [supermarkets] got a machine going across the field chopping up a tonne an hour or something like that and it’s just being bashed into a bag, whereas we’ll go on a Thursday night to the farm, where it’s been picked that day, and we’ll be selling it [the following day].

UK market trader

Fresh is bad actually, it needs, it needs time to age, mature.

UK market trader

Freshly-caught fish, not too fresh, ’cause it doesn’t taste of anything... rigor (mortis) has to set in with fish before it gets its flavour.

Former deep-sea fisherman (UK)

Smaller firms and market traders

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Smaller firms and market traders may not be able to compete with the purchasing power of supermarkets. Or the convenience of being able to get everything customers might need in one place and with free parking. ‘Alternative’ food providers are well understood to offer something unique to consumers. This is certainly the case in relation to freshness. The market management and traders that we spoke to in South Yorkshire emphasised the importance of shorter supply chains and knowing where produce comes from. Many contrast their quality produce with ‘mass produced’ supermarket food.

These commitments extend to how they source meat. Buying meat carcasses – rather than cuts of beef, pork and lamb typically found on supermarket shelves – means that they buy meat with a passport. Putting these on display offers consumers traceability to the date and place of slaughter. While most traders buy fish from wholesalers, some buy stock via agents at dockside auctions, reducing the post-catch transit time and maximising freshness.

In addition to challenging commonly held understandings of what counts as ‘fresh’, traders also challenge the view that it is a universally positive thing. For example meat (in particular beef) and fish are not necessarily at their best when they are new. Freshly-caught fish, not too fresh, ’cause it doesn’t taste of anything... rigor (mortis) has to set in with fish before it gets its flavour.

Former deep-sea fisherman (UK)

Food manufacturers and retailers in alternative food networks have long contrasted the freshness and quality of their produce with their industrial counterparts. However, key actors in conventional food systems are now making claims and competing on the ‘freshness’ of their produce. For example, in a 1995 advert, Marks & Spencer proudly assert their offer: ‘fresh, healthy and convenient, the best selection in produce and prepared recipe dishes is now available all year round’. Today, supermarkets across Europe offer ‘freshness guarantees’ just as Subway – the world’s largest fast-food restaurateur – has trademarked the advertising slogan ‘eat fresh’.

Successfully positioning products as ‘fresher’ than the alternatives, especially when they cannot be explicitly marketed as such, commands significant price premiums. For example, orange juice does not need to be sold in refrigerated cabinets. However, doing so categorises it as ‘fresher’ than orange juice sold at ambient temperature and so it costs more.

MORE NATURAL THAN NATURE?

Freshness has long-standing associations with nature. Produce that is ‘natural’ and unadulterated is often thought of as ‘fresh’. In contrast, industrial methods of food production are often seen as unnatural. Marketers are very skilled at drawing on well-established cultural meanings of nature in order to sell produce. Consider, for example, the ways in which the market for bottled water has drawn extensively on images of natural sources. Consider, also, that many consumers in rich countries would most likely be unwilling to actually drink water from a mountain stream without reassurance that it is safe. While nature can be appealing, it is also wild and dangerous. Technological intervention (such as bottling water) can purify nature or reassure of its purity.

In terms of freshness, large food retailers and manufacturers are well placed to ‘tame’ nature and offer uniformity in their produce. Indeed, a key feature of one Portuguese supermarket’s freshness guarantee is that they are demanding ‘by nature, even with what comes from nature’. Their offer is food that is consistent in its quality and freshness.

Freshness and commercial strategy

Making sure that customers have access to fresh, healthy produce is really, really key.

UK retailer representative

Freshness is integral to what we do. If we get it right then it works for the overall business.

UK retailer representative

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Freshness and consumers

Freshness is an important issue for consumers in the UK and Portugal but appears to matter more in Portugal where it relates to the ‘authenticity’ and ‘naturalness’ of food. For consumers in both countries, the opposite of ‘freshness’ is often ‘processed’. Fresh food has not been ‘messed around with too much’, has ‘no chemicals, no injections’ and ‘smells of the countryside’. Fresh fruit is said to have more flavour as a result of being grown in the sun rather than a greenhouse. Or it tastes sweet and juicy as a result of being picked and sold when ripe. In both countries, freshness serves as a proxy for health, particularly in relation to parents with dependent children.

ACCESSING FRESH PRODUCE
Consumers have a range of options for accessing fresh produce, ranging from large supermarkets to small retailers. Many are sceptical about the ‘freshness’ of supermarket produce, favouring selected independent vendors whom they trust to choose meat and fish for them. Portuguese consumers in particular make greater use of local markets due to shorter supply chains and storage times. In the UK, retired people are more likely to shop at local markets, farm shops or independent shops. In some cases they are concerned that ‘force-grown’ supermarket vegetables deteriorate quickly and that meat and fish are of poor quality.

Nonetheless, convenience, cost and choice mean that consumers in both countries continue to rely on supermarket produce. Younger consumers are concerned about the poor shelf life and the questionable provenance of produce bought from traditional markets.

ASSESSING FRESHNESS
When selecting produce to purchase, consumers assess freshness in myriad ways. Principally, they rely on their senses. In the case of fruit and vegetables they look for bruising, discoloration or ‘wilting’. Many are well aware that the appearance of freshness could be industrially produced. For example, shiny apples produced by ‘multiple waxings’ or a ‘wonderful bright green salad’ that looks fresh because it is ‘pumped full of gas’. Meat and chicken are more difficult to interpret visually, particularly in supermarkets, where some consumers suggest that artificial lighting distorts the appearance of pre-packaged items.

In addition to visually assessing produce, consumers also look with their fingers. For example, they squeeze, press and rub vegetables to see how fresh they are. Some items such as parsnips and broad beans are tested by gently bending them. Fillets of fish are squeezed to check for firmness and in Portugal, sardines are picked up by the head to see if their tails stay straight. It is not always possible for consumers to look with their fingers at the point of purchase because of limitations placed on handling certain produce, especially meat and fish. These include health and safety regulations as well as the physical barriers that packaging imposes.

Smell is also important, especially when it comes to identifying produce that isn’t fresh. Even sound is invoked – in the case of savoy cabbages – as a means of determining freshness.

MAINTAINING FRESHNESS
Consumers employ a range of strategies to extend the life of fresh produce after they have purchased it. These include removing packaging from spring onions and spreading them out in the bottom drawer of the fridge so that they do not go ‘soggy’. In some cases, these strategies were said to keep produce ‘fresher than when you bought it’. For example, fresh herbs were wrapped in a damp tea towel and placed at the bottom of the fridge.

These tactics are not limited to refrigeration. Older UK consumers are particularly imaginative. We found examples of vegetables stored outside (when it is cold), under the stairs, in garden sheds, and in old pairs of tights. Whether through choice or a response to limited capacity in the fridge, all these approaches were said to help produce last longer.
Tasting together

Given the difficulties associated with pinning down what freshness is, it is perhaps not surprising that its taste and qualities cannot easily be put into words.

When people eat together they assess and express the freshness of the food being consumed in a range of ways. These include the use of superlatives (describing ‘a spread’ of food as an ‘explosion of freshness’) and sounds (wooowww to describe the heat of a padron pepper). People also ‘jump around’ a lot when trying to put freshness into words:

“It [a bowl of salsa] looks really ‘fresh’… it all looks really, um… it makes me think of the flavours, of the taste… fresh, if that makes sense, so it’s like, I don’t know, the colours, I think it’s the colours, I’m very drawn to… food that’s colourful” (Tasting Event, UK).

Also important are what Wiggins (2002) calls gustatory ummms—utterances that convey appreciation (“Umm, that’s nice”), hesitation (“Umm, I’m not sure”), agreement or dissent, and pleasure or disgust. When people eat together they also taste together.

just as people jump around when trying to put freshness into words, eating and tasting together involves a constant flux of conversation and movement

The table is almost never full with all participants... After the soup, one of the guests takes upon herself to take the bowls to the kitchen, another gets up at times to tend to her children and another to check the dessert in the oven... The children were mostly playing with each other and would sometimes ask for something else from the table, which they would eat in their mother’s lap (Tasting Event, Portugal).

Freshness exemplifies the social life of food, experienced in the round, engaging all the senses and involving interaction with other people.

Packaging

Until very recently plastic packaging was, for many, a taken-for-granted feature of food systems. However, the problems caused by plastics have rapidly become a hot topic requiring attention from governments and their populations across the world. Concern is no longer limited to a handful of environmentally conscious citizens and organisations. Plastics have entered the mainstream of public debate—transcending national borders and traditional political divides. In the midst of calls to do away with excessive food packaging, there are those who stress that packaging has many social and environmental benefits as well as being central to the organisation of contemporary food systems. Acknowledging the multiple realities of freshness is instructive for thinking through what kind of an issue packaging is, what its consequences are, and what should be done about it. This can be thought of in terms of the different ways that freshness is enacted (introduced on page 12) and how they combine.

REALITY ONE

When technical and temporal enactments of freshness combine, packaging is a good thing. It maximises shelf life, assures that food is safe (and possibly more natural than nature), and allows for communication about the freshness and quality of the produce inside (for example date labels or ‘selling with a story’). In this reality, the only problem is consumers not using packaging as intended. For example, they might remove produce from the packaging because they think ‘loose’ produce is fresher. Possible responses include campaigns to educate consumers on the purpose and proper use of packaging or replacing plastic with less problematic materials.

REALITY TWO

When sensory and spatial enactments of freshness combine, packaging is a problem. It permits the adulteration of food and prevents consumers from handling produce to assess its quality and freshness for themselves. In this reality, consumers might put pressure on supermarkets and other food corporations to reduce or eliminate packaging. They might also avoid supermarkets in favour of alternative food networks. Traditional markets in the UK are already largely ‘packaging free’ and so are well placed to position themselves favourably in the movement against plastics.

While ‘freshness’ is very often taken as self-evident, this example shows that paying attention to the different ways in which it is ‘done’ offers a route into thinking about a key issue in contemporary discussions of sustainable food systems. If we can find ways to ‘do freshness differently’, it may well shed new light on possible responses to the challenges of single-use plastic packaging.
Fresh perspectives on sustainable food systems

A focus on qualities of food unlocks new ways of thinking about the organisation of food systems.

Conventional thinking views qualities such as freshness as self-evident, meaning that important perspectives on change are overlooked. Qualities function as key co-ordinating principles in contemporary food systems, shaping activity from primary production to final disposal. The commercial and cultural significance of ‘freshness’ is so deeply ingrained that it seems perverse to question it. However, it is now clear that securing freshness is problematic in terms of social and environmental sustainability.

Our research demonstrates that ‘freshness’ cannot and should not be taken for granted. The example of packaging shows that effective responses to what is currently a politically ‘hot topic’ might be better served by a focus on the multiplicity of ‘freshness’ than on the relative ills and merits of single use plastics. For example, food packaging that uses clear and transparent plastics in an attempt to let consumers assess the freshness of produce for themselves fails on all fronts.

Whether freshness is technical and temporal or sensory and spatial, this ‘halfway house’ packaging is suboptimal. It cannot even be recycled easily. In order to resolve tensions such as these, we suggest that attention should be paid to how freshness is done, the expectations it sustains, and its differential effects across the food system. Freshness requires extensive co-ordination between producers, suppliers, retailers, technologies, consumers, policy makers and other stakeholders. On the one hand, this underscores the point that change is multifaceted and difficult. On the other, it shows that the maintenance of the status quo requires a lot of work and is similarly complex. Our research shows that ‘freshness’ is inherently unstable and something that can be done differently with potentially beneficial outcomes for health and sustainability. Acknowledging the contingency and malleability of qualities unlocks new ways of thinking about promoting greater sustainability in food systems:

**PAY ATTENTION TO CONSUMPTION NOT CONSUMERS**

Doing freshness differently will necessarily entail shifts in patterns of food consumption. However, responsibility for these shifts should not be placed on individuals. Changes are required to the social organisation of consumption. This includes technological change, regulatory change, and changes in supply chains as well as changes in consumer behaviour. These changes need to be co-ordinated and geared towards the consumption of ‘fresh’ food that has beneficial effects across the food system.

**DO NOT LIMIT DISCUSSIONS TO LOCALITY AND SEASONALITY**

Leaving aside the need for more conclusive evidence that local and seasonal produce is ‘better’ in terms of health and sustainability, our research shows that it cannot be assumed to be any ‘ fresher’ than the alternatives. There is no definitive answer to the question of what freshness really is. Advocating a return to pre-industrial food systems in the name of ‘freshness’ is misguided. We have many more options for doing freshness differently.

**HARNESS THE POWER OF FRESHNESS**

While freshness is done many different ways, its cultural and commercial significance transfers readily across all of them. Efforts to effect positive changes in food systems need to find ways to align ‘freshness’ with patterns of food consumption that are desirable in terms of health and sustainability.

**CONSIDER ABANDONING FRESHNESS ALTOGETHER**

Conversely, there are good reasons for changing the conversation about what is important in the production and consumption of food. The various ways in which freshness is done suggests that it matters less than the qualities that it stands in for. Understanding what ‘freshness’ currently delivers – including health, taste and purity – can help direct efforts to re-organise food systems in ways that support what really matters to consumers.
ANTICIPATE TRADE-OFFS

The relationship between different enactments of freshness brings the contradictions of sustainable food systems into sharp relief. For example, there is a clear rationale for promoting the consumption of frozen produce. It can be safer, more nutritious, taste better, and help reduce waste. However, it may result in greater energy use along the supply chain and in domestic kitchens. Awareness of potential conflicts can help direct efforts to find productive synergies that minimise negative outcomes.

AVOID NEGATIVE OUTCOMES

The example of industrial freshness showcases the potential for things that are generally thought of as a ‘good’ to have adverse and unintended consequences. While it may seem obvious, efforts to develop more sustainable food systems must seek to avoid these. Priorities must be shaped by the best available evidence about health and sustainability outcomes, even if it is counterintuitive. Policies and interventions must be sensitive to how changes at one point in the food system might have knock on effects elsewhere.

There is potential to transfer learning from the case of ‘freshness’ to other qualities of food. Convenience is a good example. Like ‘freshness’, ‘convenience’ can be many different things with differential effects on the organisation of food production and consumption. Unlike freshness, it is almost universally demonised – standing in for a range of ills ranging from excessive processing to the alleged decline of the family meal. And yet elements of convenience might offer useful insights into how food systems can be aligned with the demands of modern life on the one hand, and health and sustainability on the other.

More generally, we suggest that a focus on qualities of food helps to think about the reconfiguration of food systems. Reconfiguration is a way of thinking about fostering greater sustainability in production and consumption that overcomes the limitations of conventional approaches (Geels et al. 2015).

Reconfiguration contrasts with ‘reformist’ approaches (for example, the sustainable intensification of agriculture) that maintain the status quo but suggest a few incremental tweaks such as improvements in technological efficiency. The trouble with reformist approaches is that they fail to recognise that ‘business as usual’ is not an option and that meaningful change is required. Reconfiguration also contrasts with ‘revolutionary’ approaches that call for a radical overhaul of contemporary food systems based on the principles of Alternative Food Networks. The trouble with revolutionary approaches is that they do not recognise the scale and urgency of the challenges at hand require co-ordinated action across the food system.

Reconfiguration involves changes that are technologically feasible, culturally appropriate and economically viable. It requires new relationships between diverse elements of the food system including producers and consumers, organisations and technologies, and different size firms. The emergence of industrial freshness from the 1930s onwards involved a major reconfiguration of the food system in a relatively short period of time. This gives hope that food systems can be reconfigured again, this time in a more sustainable register. Change involves a lot of effort and co-ordination, but so too does the maintenance of current – unsustainable – systems. Looking at what holds these in place offers fresh perspectives on how to change them.
Further reading

Eurobarometer 2010 Special Eurobarometer 354: Food-Related Risks.
Evans, D. 2018. Rethinking material cultures of sustainability: commodification consumption, cultural biographies, and following the thing. Transactions of the Institute of British Geographers 42: 110-121.
FSA 2008. Criteria for the use of the terms fresh, pure, natural etc. in food labelling. London: Food Standards Agency.

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SHEFFIELD FOOD FUTURES, UNIVERSITY OF SHEFFIELD
The research was completed under the auspices of the Sheffield Sustainable Food Futures research group (SheFF), an interdisciplinary initiative, committed to transforming our understanding of contemporary agri-food systems and working to improve their sustainability.
SheFF’s vision is to work across conventional disciplinary divisions between the social, environmental and health sciences and to transcend the traditional separation of research on production and consumption. We work in collaboration with a wide group of stakeholders to undertake transformative research designed to meet the challenges facing current and future food systems.
Our research is focused on health and sustainability; food loss and food waste; soil health; qualities of food; difference and equity throughout the food system; and issues of governance and responsibility in the transition towards a more sustainable future.
For further information, please visit: foodfutures.group.shef.ac.uk

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For information about further reading and the project, please visit: foodfutures.group.shef.ac.uk