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Meal mutability: Using the flexibility of recipes to understand how variations in home cooking practices differ in relation to food provisioning.

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Abstract:	Meal mutability is proposed as a concept to describe the way in which recipes may be flexibly interpreted and enacted as meals by consumers, based on different relationships between provisioning and cooking in domestic households. This concept is explored using qualitative analysis from a project focussing on modelling household food and packaging waste, and future directions are suggested for research into domestic recipes, meals and provisioning. The goal of this work is to assist the development of work attempting to estimate the environmental consequences of foods and particular meals, in order to promote healthier and more sustainable alternatives.
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Dear J-C Arboleya and J. Ruiz Carrascal,

Please find enclosed a manuscript to be considered for publication in the International Journal of Gastronomy and Food Science as a Short Communication. The word count of the Manuscript is 3050.

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I wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome. I confirm that the manuscript has been read and approved by the authors named on the title page and that there are no other persons who satisfied the criteria for authorship but are not listed.

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Meal mutability: Using the flexibility of recipes to understand how variations in home cooking practices differ in relation to food provisioning.

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Declaration of interest

Declarations of interest: None.

Meal mutability: Using the flexibility of recipes to understand how variations in home cooking practices differ in relation to food provisioning.

Abstract (98/100 words):

Meal mutability is proposed as a concept to describe the way in which recipes may be flexibly interpreted and enacted as meals by consumers, based on different relationships between provisioning and cooking in domestic households. This concept is explored using qualitative analysis from a project focussing on modelling household food and packaging waste, and future directions are suggested for research into domestic recipes, meals and provisioning. The goal of this work is to assist the development of work attempting to estimate the environmental consequences of foods and particular meals, in order to promote healthier and more sustainable alternatives.

Main body (3050 words incl. references)

The adoption of healthy and sustainable meals and food provisioning patterns by households could improve health, economic stability, and environmental outcomes (Kolbe, 2020; van Erp et al, 2021). In literatures considering the effect of recipes on the wider consequences of food consumption and production, there is a lack of attention to recipes as working concepts and how they are used by households and communities to navigate meals and food provisioning (Chalmers et al, 2019; Kolbe, 2020; Speck et al, 2020; Frankowska, 2020; van Erp et al, 2021). In other literatures engaging with meal planning, recipes are also only engaged with in passing as flexible aspects of domestic food practice (Dean et al, 2010. p.589; Yates and Warde, 2017; Jackson, 2018). This paper therefore begins by addressing the ontology of recipes directly, as a way to introduce the main argument and to make some key conceptual distinctions.

A recipe is constituted by a list of ingredients and a process at minimum. Borghini (2015) engages with recipes in philosophical terms, and proposes a performative framework for understanding them. In this framework, the food-stuff of meals is referred to as dishes, which serve as instantiations, enactments or performances of a recipe. While each instance of a recipe may be understood in specific terms through this performative framing, Borghini (2015) argues

that recipes are open-ended in ontological terms. Each recipe is “an infinite game, whose rules i.e. expertise, performative utterance, collective judgement are known, but whose beginning and end may remain unknown” (Borghini, 2015. p.736). This introduces the possibility of understanding how recipes fit into the practical organisation of household food, without relying on prescriptive ideas of particular recipes. Rather than examining the recipe concept itself, this paper will introduce and examine the possibility that the flexibility and prescriptiveness with which recipes as ideas are interpreted and performed in the household impacts how meals are planned and how households engage in provisioning.

This paper will introduce empirical material to support this argument, but it is worth noting that empirical, quantitative evidence already exists beyond the material used by Borghini (2015) to support the notion that instantiations of recognizable recipes can still vary substantially. Reynolds (2017a; 2017b; 2017c) has highlighted how a specific recipe can vary substantially in terms of ingredients, methods, and cooking techniques yet still be recognizable, for example. These variations matter. Frankowska (2020) highlights that variability between cooking practices has implications for environmental impacts, and quantitative modelling (and dietary assessment) needs to account for this variability in some way (Chiang and Sheu, 2020; Speck et al, 2020). For this reason, we build on the notion of open-ended recipes in this short communication to identify the phenomenon of *meal mutability*. We draw on material from 28 qualitative interviews and 25 research diary responses to explore how meal mutability operates in practice, and how it could relate to provisioning and gastronomic practices in the home.

We do this to highlight that there are variabilities in how recipes are instantiated between individuals, households, and communities which are systemic, with potential system wide implications (e.g. time use, energy use, or food waste). Changes to provisioning modes such as shopping, shelf life, and packaging interact with this variability. A method for accounting for *meal mutability* needs to be developed to assist gastronomic research, food and nutrition policy, and sustainable new product development.

This short communication is a by-product of the ‘Reducing plastic packaging and food waste through product innovation simulation’ project (NE/V010654/1). The project aims to create a improve on previous Household Simulation models (Kandemir et al, 2020), and Qualitative

research conducted to support the project led to the development of the ideas discussed here¹. Remote semi-structured interviews were conducted with 28 participants and 25 of those participants also took part in diary research over the course of a week (Isaacs et al, 2020). Participants were recruited by means of an initial screening questionnaire, and informed consent was gained for all stages. Qualitative, thematic analysis of the interview transcripts and diary entries was done using the Nvivo software package according to the needs and theoretical assumptions of the project.

By drawing on this empirical data, we can show how meal mutability is particularly evident when the relationship between provisioning and cooking is non-standard. In particular, forms of relatively fixed provisioning highlight meal mutability in practice. In one instance, a participant named Siobhan discussed how her meal planning fitted around her weekly vegetable box delivery. While still a marginal form of consumption, vegetable boxes and other forms of food delivery service became significantly more popular during the COVID-19 pandemic (Wheeler, 2020), after which, their popularity decreased (32-36% of the UK population used veg-boxes and other local food supplies during the pandemic (FSA, 2022), but by June 2021, only 3% of the population used boxes weekly and 8% 2-3 times a month (Armstrong et al, 2022)). Vegetable box schemes often involve the consumer being presented with a pre-arranged selection of items rather than the wide choices presented by supermarkets and the consumer is only able to indicate strong preferences against certain items. Some participants retained these deliveries since their uptake in the pandemic. When choice is constrained, consumers like Siobhan are forced to orient their selection and planning of recipes for the week ahead around what is presented each week. Siobhan described in detail how this worked for her household.

¹ The modelling team were interested in how food products move through the household and how daily and weekly patterns of cooking and provisioning interact. This research therefore approached the issue of packaging and food waste using an approach based on material culture, with key insights from Practice Theory, particularly a sensitivity to how related practices structure routines (Powell et al, 2014). Qualitative findings specifically related to household practices in relation to plastic packaging waste are to be included in other forthcoming papers.

“Participant (P): We get a veg box, so we get that on a Thursday, and we try and, that probably forces us to plan out some meals, so the one we get we don’t know what’s gonna be in it till it arrives. So usually at some point on Friday or Saturday we’ll have to sit down and have a think.

Interviewer (I): so like what’s here, what can I make?

P: yeah exactly. And to then work out what we need from the shop cause we often then if we were doing the shopping before the veg box came, we used to buy stuff that didn’t really work with what’s in the veg box”.

[Siobhan]

Here Siobhan demonstrates that pre-arranged provisioning determines to some degree how meals are planned. The veg box delivery did not only determine when planning took place, but also how it took place, as they needed to purchase the correct items in the additional weekly shop, which formed recipes with what had already been delivered in the veg box. This shows how meal mutability works, in the sense that Siobhan’s meals had to be flexible to accommodate the fixed but undeclared set of ingredients provided by the veg box delivery. Other participants like Daria also had veg boxes delivered and displayed significant flexibility in the meals they were prepared to make with what was brought. This was remarkable as Daria had a baby to care for, but still felt able to make appropriate meals in this flexible way. In one case, she described pancakes made out of chopped up cooked pumpkin that seemed otherwise surplus to requirements. This was a recipe which would involve creativity and adaptability, and did not seem to conform to standard cultural templates for a meal. Daria also described other uses for the pumpkin immediately after mentioning the pancakes, and also noted improvements in her cooking skills, despite already enjoying cooking and “good food” although it was unclear why this was the case. Daria explained elsewhere in the interview that there was a set of meals that was regularly cooked, but she also ‘keep[s] things new’. Cooking skill is an important part of how someone cooking meals approaches the task, but the flexibility of the recipe concept, and the possibilities of minor or major variations in the instances of those recipes they create in dishes (or meals) appears to matter in terms of what ultimately gets prepared, and thus what might also get wasted by being uneaten.

Daria notes that her cooking skills improved, and this raises the issue of whether such flexibility is a way of dealing appropriately with the restricted selections provided by veg boxes, or cultivated by using them. Vegetable boxes are not a mainstream mode of household provisioning (Wheeler, 2020) but they do highlight the connections between constrained forms of provisioning and high meal mutability. The same flexibility can be described in cases where participants do not receive vegetable boxes. Freya, another participant in the study, did not receive a vegetable box but her account of cooking practices demonstrates the kinds of flexible connections between ingredients that the meal mutability concept aims to explore.

“you know, we have quite a lot of stuff in stock, if you like, we have a lot of tins of different kinds of pulses, and different kinds of spices, and different kinds of carb things and, and then my partner ‘ll buy, that’s the other thing that’s a bit of the freezer is different kinds of meat and fish [...] so without having to go to a shop, you can kind of concoct something in various different ways [...] umm, and I think we both cook a bit like that, kind of, ‘What do I fancy? What have we got that needs using? [...] What can I combine that fits how I feel like eating?’ umm, so there aren’t many things, there are a few things, but there aren’t many things where we’re like, ‘I am making this one specific thing today [...] it’s more kind of ‘Oh I quite fancy something with rice and I’ve got cauliflower and potatoes so I’ll make some kind of a curry’”.
[Freya]

Freya demonstrates a flexibility in terms of the concepts she uses to generate ideas for meals. Rather than meals being based on particular fixed recipes for appropriate meals they are based on common categories of recipes/dishes that will accept a range of available ingredients. Freya went on to describe how lacking certain ingredients would not result in an automatic trip to the shops. DeVault (1991) uses the metaphor of a puzzle to capture how meal planning works in households, and is echoed by the game metaphor used by Borghini (2015). The different aspirational goals, individual tastes and the practical needs of a household all form part of the puzzle posed to those responsible for provisioning and preparing food in a household. Extending this puzzle metaphor, you could identify how and how much the recipe, or the idea that informs each dish or meal can change in response to the

need to solve this puzzle according to the different demands of each household. This is the core of the recipe mutability concept.

In the examples given so far, recipes have been fairly flexible and their demands have been subordinate to the available food. Other participants approached meals with a very different starting point, by shopping for particular ingredients and planning out particular meals through the connections between these ingredients found in recipes. Here, it is worth noting that the relationship between provisioning/shopping and cooking is reversed, since the planning of meals appeared to take place in the supermarket. Sara for example, who was living with a new housemate, described how she would put potential meals together as she walked around the supermarket shopping rather than doing this work in the home.

"when I go to the supermarket, only up until recently [...] I was always cooking for myself, and kind of you buy a pack of salmon, there's two pieces of salmon in there and you know if you cook it all together it will last two meals, a pack of chicken thighs might make a curry or something like that so that will do two or three meals... Yeah, like most things, like if you've got tinned tomatoes, peppers, onions, you can make a whole range of things when you've got like mince or chicken and stuff".

[Sara]

Along with the contrasting evidence from other participants, this account suggests that more planning at the provisioning or shopping stage, outside the home, make the specific connections between ingredients that constitute recipes important. Sara mentioned separately that she used a dieting app on her phone to generate recipes based on what she had in the home, and this combined with her reflection on the amount of meals a particular ingredient will provide in combination with others, provides insight into how less flexible recipe concepts among consumers may affect provisioning practices. In her account, anticipatory work at the provisioning or shopping stage is more involved in what meals are ultimately formed and how. Little to no practices of improvisation and flexibility in the home were described. It remains to be seen how much these tendencies differ in practice in homes with less extreme meal mutability, and if the level of waste would differ between them at all. Indeed, Sara notes that particular ingredients feature in a wide range of recipes and are thus bought more often. This echoes the way in which Freya keeps particular ingredients which

feature in many possible recipes in stock, and highlights the role of recipes as practical, performative concepts which associate particular sets of ingredients into meals with varying degrees of flexibility and recognizability.

Meal mutability in households may vary in predictable ways that may be linked to other practices and features of the household. Cultural frameworks for mealtimes and the enjoyment of food, aspirational understandings of organisation, particular arrangements of time and energy commitments in the working week, and fixed elements or structures for provisioning or organisation in the working week are all likely to play a role. In this article, the element of fixed consumption is most clearly visible, and can be seen from how the dieting app and vegetable box structure the meal making activities of Sara and Siobhan in different ways. Focusing on elements of fixity in food provisioning presents one starting point for further work on meal mutability, but there is much potential for work that connects existing work on the cultures and practices around meals, cooking and broader household organisation to work on recipe flexibility and meal mutability. Such work would ultimately lead towards a developed meal mutability concept which can assist quantitative modelling of the potential and real environmental impacts of recipes and meals. This contributes towards the goal of a circular gastronomy, towards the re-creation and re-design of meals and recipes for a sustainable future (Nyberg et al, 2022).

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Implications for gastronomy

1
2 Meal mutability is proposed as a concept to describe the way in which recipes may be flexibly
3 interpreted and enacted as meals by consumers, based on different relationships between provisioning
4 and cooking in domestic households. The goal of this work is to assist the development of work
5 attempting to estimate the environmental consequences of foods and particular meals, in order to
6 promote healthier and more sustainable alternatives. A concept which is able to account for and
7 provide potential future guidance on the connections between domestic recipe interpretation, meal
8 production and provisioning practices will improve the creation of more sustainable and healthier
9 alternatives based on quantitative modelling and assessment of nutritional and environmental
10 indicators of ingredients, and cooked meals. This is because such a concept will provide a way to
11 account for and describe particular variabilities that may have particular associations with other
12 aspects of household food practice. This contributes towards the goal of a circular gastronomy, in that
13 it pursues the re-creation and re-design of meals and recipes for a sustainable future (Nyberg et al,
14 2022).

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Conceptualization; Data curation; Formal analysis; Investigation; Methodology;
Visualization; Writing - original draft; Writing - review & editing

Christian Reynolds:

Funding acquisition; Conceptualization; Project administration; Resources; Supervision;
Writing - review & editing