

# Designing a Food ‘Qualculator’

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## INTRODUCTION: STUDYING FOOD

This position paper seeks to uncover and understand a range of everyday behaviours associated with food shopping, preparation, consumption and waste as a precursor to design. How food is purchased, prepared, consumed and its waste disposed of is of growing interest for those concerned with sustainability and ‘carbon footprint’ [2, 3]. This topic provides interesting and tractable opportunities for research on social behaviours surrounding food choices, consumption and waste, and the design of applications that may promote behavioural change.

Shopping, cooking and eating may be a mundane feature of everyday life, but as part of the work of developing a mobile application, we are interested in explicating some of the work involved. This includes the various competences involved in deciding what to eat and the considerations that are brought to bear upon this most ordinary of day-to-day concerns. We employ a range of techniques—collecting shopping lists, observation, variants of auto-ethnography, and unstructured interviews—to try to derive some design sensitivities from people’s routine everyday practices, decisions and choices in their shopping, cooking and waste disposal behaviour.

## SCOPING STUDIES: STALKING SHOPPERS & COLLECTING LISTS

Our participants agreed to engage with an eclectic mix of research techniques in order to provide some insights, some ‘sensitivities’ into their shopping, cooking and waste disposal practices. We observed people as they shopped, recording their choices and any comments made, and asking occasional questions ‘*why did you buy that?*’, ‘*why that one rather than this one?*’, and so on. As we accompanied them our participants would often explain what motivated their choices, for example in terms of different children’s preferences or diets, family circumstances, as well as cost or storage or a range of dietary restrictions etc. Our auto-ethnographies involved people commenting as they did their food shopping and taking photographs of their everyday shopping, cooking and waste disposal experiences and reflecting on what they felt this said about them. This provided insight not only into the rationale behind shopping decisions and choices but the relationship of these to wider familial, societal and ethical dynamics and issues—for example, surrounding greed, waste and ‘throwing away’ food. Since we imagined our app would be based around a shopping list of some kind we spent some time collecting and studying shopping lists. Our interest was in how exactly shopping lists were constructed and used and their place in the social experience of shopping and cook-

ing. We found some considerable variation in people’s shopping lists, in terms of what they were constructed from, how and by whom they were assembled, and how they were used, or not used, during shopping. Some lists were drawn with reference to the cooking of specific meals whose ingredients were carefully documented. Other lists appeared to be constructed around the grouping of foodstuffs or by reference to the physical layout of a specific supermarket. As Basset et al. [1] suggest, grocery list compilation, like the shopping process itself depends on ‘intersecting knowledge about family, household and grocery store’. For our participants, shopping is a complex activity where choices are made between similar items with varying properties, according to a set of diverse preferences and values of often multiple players. Our initial findings point to a range of issues and consequent design opportunities, though none of them are simple. So, with few exceptions, we find there is little direct interest or concern with ‘carbon footprint’—instead there is a mish-mash of vaguely related practical and moral concerns, choices and dichotomies such as processed / unprocessed, local / imported, healthy / unhealthy, balanced / unbalanced, practical / impractical and so on, reflecting the various ways in which the activities of shopping, cooking and disposal are interwoven with other complex social and familial responsibilities and obligations. People are not entirely unaware or uninformed about ‘carbon footprint’ but there was rarely any direct reference to carbon footprint, except the odd comment about transport and whether food was ‘local’ or imported (“*these beans came from Peru*”). Instead other issues, familial, financial, temporal, spatial issues etc. take precedence in the everyday tasks of shopping and cooking. So what is involved here is not mere calculation but ‘qualculation’ (quality-based rational judgment) [4].

## IMPLICATIONS FOR QUALCULATOR DESIGN

A number of design sensitivities emerged from our research, sensitivities that go beyond traditional ‘public information’ approaches of simply providing users with ever more information. Our intention is to develop an app that tracks and informs user choice to build a ‘rich profile’ of the impact of their lives in terms of carbon externality which can also be deployed for identifying and informing users of ‘critical moments that have impact’, thereby engaging users in a dialogue to raise awareness and offer resources for understanding their carbon profile; and as a form of ‘nudge’ [5] to facilitate informed choice. We believe that it is important that digital assistant technologies be designed into existing shopping practices rather than around them (assuming fundamental changes to the underlying activity) if they are to be truly effective. In our studies, shopping lists emerged as a major site for famil-

ial and social interaction and food both in terms of its (joint) construction at home and its use whilst shopping. If a major factor in whether behavioural change messages are influential is the context in which such messages are given, then the shopping list provides us with at least two different opportunities for relaying a message (when it is constructed and when it is used).

### Information and usability trade-off

To engage users, we need to provide a usable tool for achieving organised and efficient shopping. 'Sustainability' or 'carbon footprint' needs to be subtly integrated into a shopping assistant, nudging users towards more sustainable practices rather than pushing them. Figure 1 illustrates the design of a smartphone application interface for this purpose. Environmental impact information is encoded in a traffic-light system to provide the consumer with a coarse indication of the impact of their shopping list items, while avoiding affecting the primary shopping list functionality.

### Supporting different levels of motivation

The levels of motivation about sustainable issues varied among our participants. For this reason, a technology designed for this space should support users in digging deeper and seeking a greater understanding about particular items and their environmental impact. For example, a user that clicks the 'Bread' item in Figure 1 could be presented with the screen in Figure 2.



Figure 1. Envisioned shopping list interface. The red circle opposite 'Chicken' indicates high GhG emissions in the production process of this item, whereas the green circle opposite 'Bread' indicates that it is a low-impact food.

### CHALLENGES TO QUALCULATOR DESIGN

There are important challenges associated with engaging users in the environmental agenda, challenges that the mere provision of information may not meet. We look to aspects of 'nudge theory' [5] to offer a possible solution to some classic design and usability problems, offering advice at the right time in the right place in the right format. At the same time we



Figure 2. Envisioned interface detailing information for 'Bread'.

are aware of some of the more difficult aspects and choices, ethical and moral choices that emerge. One of the difficulties of simply folding user studies into design is that the studies portray the intricacies of the social world whilst the designers search for some simplification that might feed easily into a design. We have tried to point to some of the contextual complexities involved in these mundane, everyday activities. But design, of course, necessarily involves simplifying some of these complex interactions. By the time of the workshop we hope to have evaluated our initial design and provide some feedback on these difficult questions.

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