BALANCING FOOD VALUES: MAKING SUSTAINABLE CHOICES WITHIN COOKING PRACTICES

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ABSTRACT

Within user-centred design and topics such as persuasive design, pleasurable products, and design for sustainable behaviour, there is a danger of over-determining, pacifying or reducing people's diversity. Taking the case of sustainable food, we have looked into the social aspects of cooking at home, in specific related to the type of food that is purchased. This paper describes what it means for people to make more sustainable choices in food shopping and how that can be mediated while taking different 'food values' that household members have into account. In a design experiment, we developed a service for selecting daily dinner meals while supporting choices of sustainable food which reported on environmental impact, health and nutrition values, and purchase data. Through visualizations of alternative food choices, the experiment provided a space for households to negotiate food values, while opening up possibilities for changing cooking practices.

INTRODUCTION

Society is facing grand challenges through global environmental change, economic instability and social inclusion. Issues underpinning these challenges are manifold but household consumption, defined by the OECD (2002:2) as "the selection, purchase, use, maintenance and repair of any product or service by members of a household" is increasingly being highlighted as a key area requiring attention. Furthermore, increased efficiency of production and products has been countered by increased consumption, and volume effects resulting from behavioural, social and demographic factors (Keyfitz 1998, Stø et al. 2006). For example, 'rebound effects' have spurred consumer research which challenges previous assumptions of rational choice, planned behaviour and consumer sovereignty which tended to 'black box' consumption as an economic and material category (Stø et al. 2006, Welfens et al. 2010). Broadening focus from the individual consumer to consumption as part of socially shared practices (Spaargaren et al. 2006) holds potential for a better understanding of the role of these in the complex reality of daily life, and to find leverage points for change on the scale required for reaching a more sustainable society (de Jong and Mazé 2010).

In this paper we describe a project where we had an existing online food shopping service in Sweden as starting point. People increasingly use services like these, for various reasons such as efficiency, and some appeal to people's interest in shopping for more 'eco-friendly' products. Our initial aim was to provide customers with their personal historical purchase data as a way for them to have more control of their consumption behavior. However, this also offered the unique potential for us to intervene and influence customer's choices in order to shift towards choosing products with less environmental impact and to raise the issue of producing less food waste at home. A study conducted by the Consumer Society in Stockholm (Ungert 2008) shows that the Swedes, on average, discard about 28% of the purchased home, where 18% is unnecessary waste (food that does not consist of inedible parts). By making alternative food choices the daily diet would cause only a quarter of energy output (13MJ) compared with a more energy-intensive diet (52 MJ) (Stockholms Stad 2008). In relation to these 'good' food choices, there is also a great potential to reduce environmental impact by using locally produced food, a

change that also generates cost savings. However, there are several unresolved questions in this matter, which we cannot all address in this paper since it is a complex discussion very much dependent on the system boundaries chosen, and also driven by political agendas. For instance, the question if local production, such as beef produced and consumed in Sweden is environmentally better in terms of less transportation versus potential large-scale benefits of production of beef elsewhere in the world.

The questions that we are addressing in this paper are how people make food choices for everyday home cooking practices, and how to engage and support household members in making sustainable food choices.

BACKGROUND

DESIGNING CHANGE

Approaches for raising awareness and changing people's consumption behavior often focus on designing interactive systems, for instance by presenting information on resource uptake in a visually attractive and easily accessible way. For example, for reducing direct energy use in households, the goal is to make people reduce their energy uptake by making energy uptake itself both more visible and understandable as to what and when it is used for (Broms et al. 2010). However, some domestic energy-consuming practices, such as washing clothes are non-negotiable (Pierce 2010), where people simply are not willing to make a change. Interactive services and products are also available for shopping 'eco-friendly' food products, such as bar code scanners and applications revealing the 'eco-footprint' of food products or ingredients when standing in the store. However, choices of food are driven by other than rational goals as well. They are not only economically and culturally driven, but set and embedded within a social context (De Borja, 2010).

In our previous work we have investigated the concept of social practices (Author 2012) in order to study the role of design for shaping alternatives to current water and energy consuming household practices. We have adopted the definition of a practice by (Reckwitz 2002), since it explicitly mentions 'things' which we find useful in relation to product design:

"a routinized type of behavior which consists of several elements, interconnected to one other: forms of bodily activities, forms of mental activities, 'things' and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge"

A basic characteristic of practices is that they consist of a constellation of interconnected elements, of which 'things' and their use, mental activities and emotional states, and bodily activities and background knowledge are part (Shove and Walker 2010). While designers are trained to design products, Shove and Pantzar argue that "products ('things') alone have no value. They do so only when integrated into practice and allied to requisite forms of competence and meaning" (2005, 57).

Taking practices as a unit of design (Kuijer and de Jong 2012) means not only to focus on the design of new things but to think about novel constellations of skills and images as well. However, this is still not all of it. Again in the words of Shove and Pantzar, "new practices consist of new configurations of existing elements or of new elements in conjunction with those that already exist. From this point of view, innovations in practice are not simply determined by the generation of new products, images or skills. What really matters is the way in which constituent elements fit together" (2005, 61). In practice-oriented design, the focus expands from things to images and skills, but not without consideration of how these fit together. For example, practices of washing, cooking, travelling and gardening (De Borja et al. 2010, Hielscher et al. 2008, de Jong and Mazé 2010; Spaargaren et al. 2006) are understood as a historically and constantly changing assemblage of designed artifacts, skills and images. Taking practices as unit of analysis offers sustainable design the systemic perspective necessary to address the scale of change required in moving towards a more sustainable society (Scott et al. 2012).

In this project we adopted cooking as main unit of analysis. Although people in Sweden are believed to have a limited number of eight to ten dishes that they prepare for about 80% of the time, there is a large variety of lifestyles between participants from different backgrounds even in similar environments. While for some this is inherently a fun and family matter where taste and variety of dishes and ingredients are on the top list, for others the hassle of this everyday recurring activity but also lack of knowledge and skills, lack of inspiration and the actual planning of meals requires much effort (Spengemann 2011). People have very different personal goals when it comes to what food they choose, varying from balancing quality and price, to health issues, as well as social values.

The increased use of different technological devices and convenience of ready-made food has brought about a new set of skills than in traditional cooking (Truninger, 2001). Processed and pre-prepared food can be combined into tasty dishes and this way of cooking might fit better to the way in which food is sold in supermarkets. In that perspective, it is not enough to simply bring back traditional skills and knowledge to the current cooking practices if the aim is to have a fit with people's modern values. Re-introducing traditional knowledge is seen to have potential but is believed to not hold all the skills needed for the modern context of food practices. This means that new skills and products have to be developed that fit to the context instead of having to re-learn 'traditional skills'.

PRACTICE-BASED DESIGN PROCESS

We adopted an explorative design approach to explore and open up cooking and shopping practices. It was

carefully guided by the research team for developing design examples in which issues of awareness and social interaction in relation to food shopping choices could be explored, see for example our previous work for such an approach [Mazé and Redström 2008]. Rather than ends in themselves, designed artifacts can be instrumental in futures studies for approaching the social complexities and controversies inherent in dealing with sustainable futures. For example, visualizations may frame perspectives on otherwise intangible and complex phenomena, conceptual or critical designs may broaden the collective imagination by depicting alternative futures or viewpoints, and scenarios may illustrate transition pathways (Mazé and Önal 2010, Quist 2007).

The project was set up around a design team, consisting of service designers and user researchers with a design background, and managers from an online grocery store, joining together in monthly meetings as well as in the participatory design workshop. In these working sessions, quantitative survey data as well as qualitative ethnographical material from the user research was presented as building blocks for the design process, resulting in several design proposals for an online shopping service. One of which was elaborated as prototype for explorative evaluation with users. The project started in February 2011 and lasted one year.

EXPLORATIVE RESEARCH

Our starting point was to get more insight into what food values people have, and how people actually make choices what to eat, what these choices are based on and how this is embedded in a socio-cultural context. We started off with explorative research by inviting ourselves to accompany people into both physical and online stores. Afterwards, we joined into their homes while documenting the entire sequence of unpacking and storing by video and/or photos. Such documenting was done throughout the project, including evaluation of the final prototype, and data was fed into the design process shaped as stories, pictures and quotes of participants' practices.

ONLINE SURVEY

As a first indicator, we conducted an internet survey on what people think about 'ecological' brands, and what they need in order for them to make more sustainable choices in their food shopping. The survey contained questions ranging from the amount of ecological products people buy to amount of food that is thrown, as well as the reasons for making (non) environmental food choices. The internet survey was set out amongst personal networks of the design team members, and was eventually filled out by 42 persons. The results were analyzed by quantitatively assessing the results and were regarded as indicative. Results suggested that people suffered from a lack of trustworthy information on food products to make sustainable food choices.

ETHNOGRAPHIC STUDIES

In response to the need for diversity and inclusion of people with different 'food lifestyles', we set up our explorative observations and interviews with people whom we expected to have different personal goals: a person with an interest in eco-products, an online shopper with small kids, a food expert, and a person *un*interested in food waste. Furthermore, one person, the 'food expert', agreed to be part of the project during all research iterations, see also Figure 1.

We found it particularly important to observe people directly at the store where they usually would go for shopping food or groceries, and at their homes. If possible, we invited them to be interviewed with family members. For various food choices, it is difficult for people to verbalize their thoughts about things they do in the store and why they choose certain products or brands. Similarly, it will provide more direct and evidence based information when people show things in their kitchen or at the store. For example, to see what type of ecological products they buy and why, how they go about with information on products, where and how they store things at home, and whether they are aware of the food they have in their cupboards and fridge. Meanwhile, we asked questions about special occasions, such as dinner parties and birthdays, and how they used to think about food products and shopping in the past.

The explorative research included two moments in time for the observations and interviews: (1) at the start we performed explorative observation with 4 people during shopping at the physical store or online at home (each roughly 1.5 hours), and (2) half way during the project, we organized interviews with 7 people, of which the one person as 'food expert' had been part of the first observation round, to evaluate and prioritize three design proposals (each roughly 1.5 hours).

METHOD OF ANALYSIS

We analyzed and transcribed all collected material from the observations and interviews, resulting in a total of about 20 hours of video and audio recordings. The questionnaire, observations and interviews were mainly used to inspire the design process, not to form an accurate overview of different food values and people. These were reported in user profiles reflecting personal information as well as ambitions and problems, see Figure 1.

Figure 1. User profile with picture, quotes, drivers/ambitions, opportunities, problems and thresholds.

FOOD CHOICES

The food values of participants that we found in the research showed a high variety between people. They ranged from a high demand for taste and quality from food experts, who are experimenting with food, and the eco-interested person who uses social media for exchanging recipes with other similar minded people. Others values coming from the online shopper with kids and the food expert, are related to issues on health and nutrition, for instance from people with children or people with specific diets. Also, a lack of inspiration and knowledge reported as a 'daily hassle of balancing quality and price' is a recurring issue among all participants.

How people make food choices and what it is based on, has been divided in two themes: firstly, trustworthiness of information and secondly, balancing food values.

TRUSTWORTHINESS OF INFORMATION

Participants indicated in the first explorative interviews and in the internet survey that they had a need for knowledge on the environmental impact of their food consumption. They indicated that they did not trust the eco-brands, or that they did not know how to interpret the information and understand differences between the 'eco-products'. Also, unverified stories going around about 'good' and 'bad' products, and proper ways of preparation were a source of frustration. Here, participants are searching for answers online and in their personal networks, but do not know where to look for trustworthy information.

From the observations in the store, it became clear that participants had various ways of determining quality of specific fresh products, for instance the food expert was touching and smelling fruit and vegetables, and looking at the product's color, texture, as well as due dates of fresh products. The eco interested person and the food expert were keen on getting raw ingredients or locally produced food, as opposed to the ready made dishes, pre-cooked and processed food to avoid artificial food supplements. However, the online shopper also indicated not to know how to relate to environmental impact and was especially unsure about other impacts, such as packaging and transportation and how that worked out as a whole.

BALANCING FOOD VALUES

Participants take the everyday returning choices of 'what to eat' very differently. For the food expert with teenaged child who is also deciding on the daily dinner meals, there is more discussion and negotiation on sustainable choices. But for the online shopper with small kids it is more important to have a healthy and balanced diet, combined with a good quality/price index.

Although for the eco-interested person the environmental impact of food products was an important part of the decision process, other participants find it difficult or not important and rather relate to taste and health/nutrition. Some participants use a home delivery service, or have used it earlier. These services take care of deciding what to eat, and deliver the ingredients for dinner meals, for instance. Some of these services are geared towards providing fresh and locally produced ingredients and 'eco-products'. Again the participants mention trust and that it is important to believe in the quality of the service, the products they deliver, and what it stands for.

An important value, that is already touched upon, that all participants mentioned is health and nutrition. Even though the importance of this has changed continuously during their life, with getting children as the major instigator for taking this more seriously, most participants mentioned that they still have to balance the quality of products with their finances. Evenmore, in households where not all members prefer the same food, for instance those with specific health or vegetarian wishes, participants indicated that this adds to their daily struggle of finding harmony in everyday cooking.

In terms of food waste, participants often mentioned not to know what items were lying around in the fridge and cupboards, nor did they know about their due dates. They also talked about dinner left overs, which were made into lunch boxes for the next day or, what also happened, that left overs were being placed in the back of the fridge or freezer and forgotten over time and eventually were thrown. This is something that people said they were actually feeling unhappy about and would like to avoid.

DESIGN EXPERIMENTS

Given these food values and choices, we were looking for points of intervention for our design example. We sought to find those instances where people are open for discussion and interested in hearing more, or where they are already looking for alternative ways, or even trying out new ways of cooking to see how those fit in their everyday lives.

Figure 2. Participatory design workshop with a futures approach.

By taking a futures perspective, as explained in the background section, which was set in a participatory design workshop format, we aimed to open up potential scenarios without the present political and social power structures, see Figure 2. For instance, what it would be like if there was a high food tax on specific products or if more types of food waste than compost could be recycled in ways similar to recycling of paper and plastics. Even so, it is extremely difficult to imagine how that would work out, and more specific, what the consequences of those 'future conditions' are for people's everyday life. However, it opened up a way of thinking and reflecting on food values and cooking practices that are not restrained by, for example, industries' sales objectives or accessibility of locally produced food.

As a result, we formulated four directions that worked for us as a way of framing 'design spaces' in which we could start formulating our design examples:

1. Informative, which support individual customers during actual shopping with information,
2. Collaborative & Social, focusing on the potential of social media to engage people in networks for getting inspiration, or gaining skills and knowledge,
3. Coaching, which is based on open access of purchase data and linking those to user profiles.
4. 'Futuristic', involving more interactive modes of coaching where questions can go back and forth on a more personal level, such as stress levels.

Within these directions, we sketched and, in the end, defined three design examples. They were different types of services and we chose one for each direction, apart from the Futuristic direction: (1) A shopping service with an extra layer for local producers and food experts to exchange knowledge and ideas, (2) A recipe service for sharing tips and recipes, and (3) A planning service with factual data on food and guidance for changing food patterns.

DESIGN EXAMPLE

To be able to reflect on the questions we posed in the research, we developed one design example called 'Food Planner' further. It is based on the third design direction, and was prototyped as an application for an iPad, see Figure 3, only for the purpose of the research. This gave us the opportunity to study the type of feedback and information that people actually supports in their decision making and possibly in changing their cooking practices.

We chose the Food Planner, because we were looking for ways to support and engage household members in cooking practices, with meals as the center of attention for people´s inspiration, negotiations, and choices. By offering several options for dishes, including healthy alternatives and showing their environmental impact, it aims to create discourse around food preferences as a way of reflecting on people's cooking practices. This would mean, for instance, that if one person in a family thoroughly enjoys beef (with high environmental impact), and another person prefers vegetarian dishes (with low environmental impact), it can be made 'acceptable' for both to have some beef dishes since it will be balanced out by vegetarian dishes.

Figure 3. Family planning of weekly dinners in the interview setting.

We will briefly present the design example here.

The final design has several features that allowed people to plan their dinner on a weekly basis by choosing ready available meals and recipes. The selection of meals made it possible to create a point system of meals' environmental climate impact. Such a point system is preferable since impacts are defined in intervals and making the points correspond to these intervals. Similar to the point system of Weight Watchers (2013) for nutritional information, the system creates an intuitive model matched to different goals (for instance a goal could be 10 points/day). Furthermore, it is only necessary to calculate products in common recipes and the impact of many products converge to zero in small quantities.

These calculations were based on Life Cycle Assessment (LCA) calculations of indirect energy caused by producing, transporting, packaging, etcetera, of food products. The calculations were estimates, based on environmental impact databases made available through our previous project ‘Reclaim your data’ in which data was developed by Swedish defence research through the use of an energy analysis program, which is a simplified LCA method. The LCA calculations were made for a small number of example dishes by calculating the type and amount of ingredients, and add their relative impact in terms of CO2 emissions, see Figure 4 for an example.

To set the CO2-score we multiplied the total amount of CO2 with a factor and put the result in different intervals. To set this factor we experimented with the numbers and found a reasonable balance between having low numbers, which are easier to remember and more accurate in terms of letting errors into the intervals- and still expressing variations between most dishes. Thus, most recipes wouldn't be in one or a few intervals.

In the prototype we set a goal of a maximum of 40 CO2 points per person and week based on dinners. This was mostly an experimental number but it was based on a 25 % decrease in CO2 consumption from the current consumption. This was up to people themselves to set based on their current consumption, and then to gradually lower it so as to make it feasible for people to reach the goal.

The nutrition and health information was based on the content and balance of ingredients of the meals, such as fibres, fruit/vegetables, sugar, salt and oil-based products, where we used customized preferred daily intake overviews for visualizing the data.

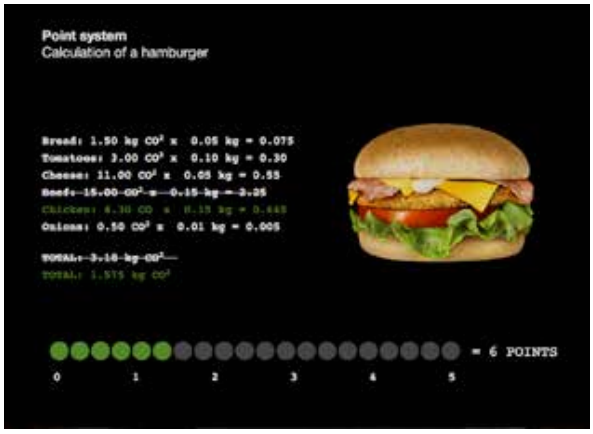

Figure 4. Example of LCA calculation of hamburger, including a meat alternative, in CO2 values and related point system.

The calculations and information were gathered purely for prototyping purposes. They did not reflect accurate numbers, which was also pointed out to participants in the user tests. Our intention here was to describe possibilities and boundaries with a possible system of CO2-feedback rather than develop it.

Another feature is the democratization of data. As people use services in their daily lives, such as shopping with loyalty cards, large amounts of data about their behavior is generated and analyzed to empower organizations in their decision-making. Therefore it provides people with the opportunity to access their own purchase data, which could give ’power back to customers’. Apart from historical data on quantities of products, the service also generates a shopping list based on the chosen meals, with which people could check their stocks and take away those items they don’t need, hence reducing food waste.

In Figure 5, the design example is shown. Here, it reflects the main screen with pictures of dishes, as well as their ingredients and recipe. For each meal, an indication of environmental impact of all the ingredients is provided by a number reflecting environmental impact. Those are added up in a bar depicted underneath the chosen recipes which is visually filling up from the left in green, but turning orange and red as soon as a, self-chosen, goal of maximum total number of points per week was exceeded. Also, accumulated overviews of environmental impact, including so-called ‘top five ingredients’ and personalized suggestions are provided in follow-up screens. Other overviews, not depicted here, include the health and nutrition graphs, and financial overviews.

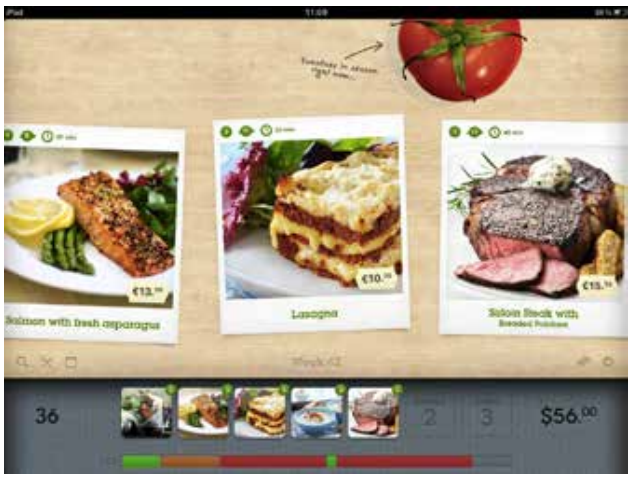

Figure 5. The first prototype of the design example Food Planner on an iPad with the suggestion of daily meals, including direct environmental feedback.

EXPLORATIVE EVALUATION

The prototyped design example was explored by 6 participants, including other household members, at their homes in an 1-2 hour interview. The participant that had taken part from the beginning was included in the evaluation as well. For the purpose of the research, about 20 dishes were taken up in the service, as well as their calculated environmental impact, and the nutrition

and health data. The prototype functioned in terms of the visual layout of the screens, possibility of manipulating images of meals, the shopping list functionality, graphs and overviews, but did not resemble reality in terms of actual store content and exact data.

The interviews were themed by taking out quotes and reporting those within our questions of food choices and changing practices: (1) Making sustainable food choices and (2) Changing everyday cooking practices.

1. Making sustainable food choices

In the service we included three types of information feedback that people indicated they needed: an environmental impact point system, health and nutritional graphs and financial overview. For choosing dishes, visualizations were provided in clear and bright pictures of the dishes. People mentioned this as an important feature since food is all about texture and colour and this is a good way of referring to those values, albeit in a different way. However, they also clearly indicated that they wanted detailed overviews to compare their data with others and also for setting their personal goals. On a more practical level, people expressed preferences on the way the environmental impact was depicted. For instance, they felt they were punished by visualizations indicating high impact numbers in a red color.

Credibility and accessibility of information are two important notions within the service for people to actually make changes in their routines, which they feel are worth the effort. Several participants indicated afterwards in the phone interviews that they became much more aware of the products they choose and to be more active in finding information and alternatives. Apart from providing purely information about the background of products, there is also a need for more personalized, humorous and visually attractive stimuli and remarks that are aimed towards making people reflect on their consumption patterns, for instance a remark on environmental impact that says “Oops, too much beef here”.

2. Changing everyday cooking practices.

Participants indicated that even though the environmental impact was simplified within a point system, it is a notion that is often unfamiliar to participants and that they cannot relate to their everyday life. In order to become useful for them, they need a way of comparing the impact value with other things that they can relate to, such as the impact of traveling or energy use, or with other people. In terms of nutrition and health, graphs are difficult to interpret for some people, but in general this was seen as an important feature of a total service. Similar viewpoints arose on the graphs reflecting historical purchases and financial overviews.

During the evaluation, some participants actually had to change their shopping practices since we interviewed them sitting together as families, which they normally would not do, as they said. Here, teenaged children got very involved in the selection of dishes, see also Figure 3, and it provoked discussions on food choices among family members, of which they said that they had not known about other members’ thoughts before. During the interview negotiations on the planning of dishes in one week were going on between family members, such as “but you have already had your steak and now I would like to have the beetroot soup”. It facilitated a meaningful interaction amongst family members in a playful way, contrary to the notions of ‘hassle’ and ‘efficiency’ that we encountered in the earlier user research.

DISCUSSION

Our goals in the project were to understand how people make food choices and to explore how to engage and support household members in making their food choices more sustainable.

We found two important themes related to people’s food choices: (1) Trustworthiness of information, and (2) Balancing food values. We have been experimenting with these themes by designing several design examples of which we have prototyped and evaluated one, the Food Planner, a service for weekly planning dishes presenting reliable information on environmental impact, nutrition and health information, and financial overviews based on purchase data. The environmental impact feedback was visualized in a point system, based on LCA calculations of food products in Sweden, albeit with a limited size of the database. The nutrition and health information was based on the content and balance of ingredients within estimated preferred daily intake overviews.

CHANGING PRACTICES

While issues on presenting and visualizing data on resource uptake are not new, we have begun to explore ways to present the information of environmental impact of food to people in an easy, yet rich way. Still, many issues remain open for questioning, such as the point system for environmental impact of food products and the relation of such a system to other resource uptake indicators.

We have also intervened on a social level, by facilitating negotiation and decision making within families. However, we discussed changing routines only in the interviews and we have to question whether this comes near to the level of forming and stabilizing ‘new’ practices that we feel is necessary. In order to understand how cooking practices can be shaped, we may need to step away from current modes of interaction and devices that come on top of the current information load that people handle in everyday life.

EXPERIMENTAL DESIGN APPROACH

The experimental design approach taken in the project as well as the continuous iteration of the user research

into the design process has led to design iterations that were made on the basis of the aim of the team members to understand how to relate to people's food values. Team members were eager and anticipating on implementing insights and evaluations of the prototyping phase into the final design example. However, they had to get used to the way the project was framed, without the existence and formulation of a 'design problem', and instead searching for design examples as a way to study a phenomenon rather than designing a 'solution' for a certain 'need'. Our design team, although varied in terms of expertise, did not represent customers, nor did it include people from other socio-cultural backgrounds than our own. As a concluding remark on participatory design, we need to be careful when thinking in terms of who we are designing for, and who we relate to as 'the others' (Keshavarz and Mazé 2013), or as the put it "The role of the designer and researcher simply cannot be pre-constituted, nor its terms of participation. Design must be queried at the 'political frontier', in which other, situated forms of knowledge are embodied in social- and change-oriented practices".

Future research is underway and will take up the precise calculation of meals and how people can relate that to other (in)direct use of resources. Also, the mode of the current design example has been used merely as an example and possibilities of other modes, not necessarily online shopping, but more directly related to food, such as in a physical grocery store will also be investigated. Maybe most importantly, we need to take a step back from this experiment, and, perhaps guided by principles of backcasting and future studies (Wallgren and Höjer 2009), find alternative scenarios that do not introduce yet another interactive technology.

CONCLUSION

In this paper we have presented how we explored issues around making sustainable food choices in everyday home cooking practices. Important themes that we found in our search are: (1) Trustworthiness of information, and (2) Balancing food values.

We have prototyped and evaluated one design example, the Food Planner, a service for daily planning of dishes which presents reliable information on environmental impact, nutrition and health and financial overviews, which proved to be a viable means for exploring and negotiating people's food values. However, we will still need to verify by means of long-term studies, for instance, to what extent people will actually make more sustainable food choices and change their cooking practices.

Future research will take up the development of the suggested point system for environmental feedback, to assess whether and how this will actually succeed to become an effective means to create discourse in households on food values and accordingly, to develop new cooking practices.

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