

DESIGN EXPERIMENTS FOR SUSTAINABLE EATING IN FINLAND

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ABSTRACT

This paper presents two design experiment opportunities on sustainable eating in Finland.

First, clarification of scientific concepts is urgent because misconceptions lead consumers to focus on minor issues, or to develop negative perceptions on sustainability. Second, a socio-cultural approach to sustainable eating is proposed, by investigating Finnish consumers' perceptions on food origins, how their social identities are shaped/expressed with food, and the sustainability of popular Finnish recipes. Future design experiments on consumers' knowledge, attitudes, or behaviours with public installations and commercial data collection systems are proposed.

INTRODUCTION

According to Freibauer et al. (2011), global food demand will increase by 70 % between 2011 and 2050, thanks to 9.2 billion of world population and changing diets in developing countries. Inevitable food insecurity will follow, from natural resource depletion and climate changes that adversely affect food production. The bidirectional relation between climate changes and food production calls for our immediate actions to mitigate anthropogenic greenhouse gas (GHG hereafter) emissions from food.

Among all activities involved in the food supply chain, the primary production of food—agricultural activities to grow crops or rear livestock before processing, packaging and distribution of food products—and how it affects the environment deserve more attention: Seppälä et al. (in Roininen, 2012: 33) have evaluated that primary food production accounts for about 60 % of

all environmental impacts from food in Finland. Virtanen et al. (2011: 1852) also estimates that agricultural production accounts for 69 % of domestic climate change impacts in Finland, among which meat (25 %) and dairy (20 %) have bigger impacts than grain (11 %).

Considering consumers' dietary choices significantly shape a country's agricultural planning and land use, Finnish consumers have the power to drive Finnish agricultural practices in a more sustainable direction. For instance, Saarinen et al. (in Roininen, 2012: 34) suggests that the climate change impacts from household food consumption can be decreased by 75 % by simply switching to "a vegetable rich, but still nutritious, seasonal diet". Such a change will be beneficial to both environment and consumers. Currently Finns' daily meat consumption is 198.7 g per capita, and it is much higher than world average of 127.6 g. Finns' daily dairy consumption was 98.9 g per capita, and it is the highest in the world. According to *Dietary Guidelines for Americans* (2010), adults generally need 10 to 35 % (50 to 175 g) of protein, based on a 2000 kcal/day diet. Excessive dairy consumption is linked to prostate cancer, and eating too much meat can increase the risk of heart disease.

Reducing meat and dairy from Finnish diet is a logical step to take. Finnish consumers, however, do not see the urgency and gravity of the issue. Latvala et al. (2012: 75) found that 48 % of Finnish participants eat beef and pork over three times a week, and they do not intend to change their current eating habits.

This study assumes that *lack of communication and understanding* between scientists and consumers is at the bottom of this phenomenon: consumers do not understand what scientists are talking about and how it is relevant to their grocery shopping or dinner. Scientists do not know why consumers cannot adjust their behaviours according to their recommendations. This paper will clarify the assumption, and proposes design experiments on the same ground, for (1) clarifying scientific information for general audience, for improved awareness of food production—environmental impact linkage, and (2) understanding Finns' eating habits from a socio-cultural perspective, as

consumers' perceptions on food origins, social identities shaped/expressed with food, and traditional-contemporary recipes factor in Finns' dietary choices. Directions of future research are suggested in the conclusion.

NEED FOR SCIENTIFIC CONCEPT CLARIFICATION

Despite the aforementioned projection of food insecurity, recent studies show not many Finnish consumers recognize food production as a major cause of GHG emissions (measured in carbon equivalents) and climate changes due to the following reasons.

CONFUSIONS IN KEY CONCEPT DEFINITIONS

Wiedmann and Minx (2007) call attention to the lack of a common definition for *carbon footprint* among both scientists and the public, despite the ubiquitous use of the term. Current definitions range from the 'total measurement of all green house gases in carbon equivalents' to 'the amount of only carbon dioxide emitted through the combustion of fossil fuels'.

Roininen (2012: 73)'s recent qualitative study with 33 Finnish participants reports that the concept of carbon footprint is poorly understood. Some defined it as "all the *pollution* and environmental load" or "all the energy and *pollution*", and keywords that Roininen was looking for, "carbon dioxide emission", were missing in their definitions. Later, Roininen provided a short description of the term for the participants but even with it, "many seemed struggle what it really means". Limited understanding of the concept led to limited attribution of its sources to "[food] transportation, processing and waste from packaging".

In short, the term *carbon footprint* is not clearly defined by scientists, and the public vaguely understand it as something that comes out when you use energy and pollutes the environment. The term was not linked to food production as a major cause, or to climate changes as a consequence.

CONSUMERS ARE DISTRACTED BY MINOR ISSUES

The limited understanding of carbon footprint as *pollution* explains why consumers link it to other negative concepts such as *transportation* (because of car emissions) or *waste*, while it is hardly related to positive concepts such as food production.

In Owen et al. (2007: 11-12)'s focus group study with British participants, food-sustainability linkage was made only after being prompted by the researcher. Most participants paid more attention to consumption (reducing packaging and waste, composting food scraps, e.g.), while not much was mentioned on how national production of food affects the environment in a bigger picture.

Roininen (2012) also reports that the participants immediately cited *housing*, *transportation*, and *waste* as major sources of environmental impacts, while *food* was

mentioned by only one person in relation to waste and transportation. Later, when participants were asked to talk about food as an environmental issue, some participants struggled in explaining the relationship. The majority named food packaging, energy consumed for processing and transportation, while at least some mentioned meat as a source of food-related environmental impacts. Roininen points out that such low awareness might be pretty common among Finns.

NEGATIVE PERCEPTIONS ON SUSTAINABILITY

Also in Roininen (2012: 70)'s study, sustainable behaviours ("eco-thing" in the participant's own word) are perceived as something related to "hippie" culture, and understood as "give up so many things", and too much of it can be unhealthy. This simple comment exemplifies how many ungrounded beliefs and wrongful associations are out there to be fought. The vegetable-rich diet recommended by researchers may sound similar to Hippie food, it is recommended on scientific, not spiritual or moral, grounds. Adjusting your diet is not "giving up" or "sacrifice" if it is your voluntary choice for your own good: healthier body and safer environment.

Negative perceptions on third-party certified eco-labels are reported in Järvi (2010)'s study conducted with 100 Finnish participants. Three organic food labels are pretty well recognized (3.3/5 on average) by the participants, but organic products are considered just "expensive" because participants do not see the advantages of organic food over regular food clearly. Järvi recommends displaying comparison information for consumers in the future.

In summary, the first part of this paper reviews how consumers' misconceptions of sustainability lead them to focus on minor issues or develop negative perceptions. Interdisciplinary efforts from scientists, designers, and public communication experts are called for, for more effective sustainability communication and education.

APPROACHING SUSTAINABLE EATING FROM A SOCIO-CULTURAL PERSPECTIVE

In addition to educating people, researchers have been trying to understand consumers' food buying/eating behaviours. McCarthy et al. (2003) shows that Irish consumers consider *health*, *eating enjoyment* and *safety* when they choose beef, more than *price*, *environment*, or *animal welfare*. Latvala et al. (2012) found that Finnish consumers change their diets mostly for *health* and *weight management*, but *environmental concerns* and *animal welfare* are also significant factors. While these studies see buying/eating food as economic activities based on consumers' rational considerations of benefit and loss, food behaviours are also socio-cultural activities. What people think of a vegetarian male, for example, is partially rooted in the dominant gender role/behaviour discourse in the community. Changing a person's eating habit is not a matter of personal

preference; the community defines what is appropriate to eat. In that regard, this research argues for three research themes on the socio-cultural aspect of food behaviours.

POSITIVE/NEGATIVE PERCEPTIONS ON FOOD ORIGIN

Food origin information matters as it hints on the quality, safety and freshness of the food, as well as locality. What is *local* is much disputed; In Roininen (2012)'s study, participants used the word in places of *rural*, *domestic*, or *organic*. Locality is a relative concept, and food mileage alone does not guarantee less GHG emissions, but buying local food is widely believed as a sustainable behaviour. Some Finnish consumers favour Finnish-origin food items on that ground. In general, displaying Finnish food origin in Finnish market is assumed to boost sales as Finnish products are trusted by consumers.

In fact, consumer attitudes towards food origin changes depending on how the information is presented. Pouta et al. (2010) discovered that Finnish-origin broiler meat is very positively received when the information is presented in plain text, but presenting it with organic product symbols (consumers were not familiar with them in this study) adversely affected. Luomala (2007)'s study with Finnish consumers, on the other hand, reports that only 8.7 % of them chose Finnish-origin Edam-cheese when they were primed with a cognitive approach, while 70 % of them chose it with an affective approach.

The findings from these studies show that displaying food origin information may not always encourage consumers to buy that product because (i) each person's definition of what is *local* varies, (ii) from origin information, consumers not only read food mileage, but positive/negative reputations of the food item from that region from their cultural knowledge, and (iii) consumers' collective belief, trust, patriotism, prejudice or other psychological factors make their purchase behaviours rather unpredictable.

SOCIAL IDENTITY AND FOOD

People are cultured to eat certain food items, and they choose what to eat considering how they want to be seen by others in different social settings. Some food items have strong associations with gender, for example, "Meat is masculine food, powerful food; to be a 'real man' in our culture is to eat meat — lots of it, and the redder the better" (Fox 1999: 27). A *New York Times* article also wrote, "meat-eating persists as a badge of masculinity, as if muscle contained a generous helping of testosterone" (Brubach 2008). Not much was written about food-gender association in Finland, but in Latvala et al. (2012)'s study, meat-eater group was described as male-dominated.

Another aspect of Finnish males' eating habits is observable in grocery stores. In Järvi (2010)'s study of eco-labels, Finnish male shoppers' spontaneous buying behaviour, without much consideration of product labels

or attributes, was reported and such a tendency is a strong obstacle in communicating sustainability messages to them. The gender and other socio-demographic differences in eating and grocery shopping behaviours deserve more attention in the future, in relation to a broad range of consumer attitudes. One message would not work for all; sustainability messages should be customized for each group.

CONTEMPORARY FINNISH RECIPES

The social identity shaped/expressed with food is also related to how Finnish society has changed and its impacts on traditional-contemporary Finnish recipes, because a person's food preference is developed at a very early age, and it is partially shaped by the national culinary tradition. A country's traditional recipes reflect climate conditions, arable land use, and economic development. The traditional recipes evolve into contemporary ones, reflecting economic and social changes such as affordability and availability of food items, changes in life styles (increased urban population, single living and single parenthood, longer working hours, etc.) Researchers can focus on unsustainable but popular Finnish recipes and find reasons behind them. Finnish nutritionists already started calculating environmental impacts from popular recipes and the data will be made public soon.

Societal changes also bring about different perceptions on food items. For example, in many countries with records of economic hardship in the past, meat-eating has a very positive perception because meat used to be a pricey commodity. The authors suspect this is the case in Finland. Now meat is affordable for everyone but still meat may be favoured over vegetables thanks to this historical background. A study of Finnish consumers' food language, how food items are talked about in various contexts, their metaphorical and symbolic meanings, may shed more insights on this topic.

To sum up, the second part of this paper suggests looking into the socio-cultural dimension of food behaviours, because much of what consumers do in relation to food is done out of norms, habits and beliefs, as well as based on rational thinking. To uncover in-depth qualitative data in this area, artistic and experimental approaches are suggested to encourage consumers' voluntary and focused participation.

CONCLUSION: FUTURE RESEARCH ENDEAVOURS

This paper is written to bring design research community's attention to two design experiment opportunities: parting knowledge for the public on food-induced environmental impacts, and understanding consumers' food perceptions and behaviours from the socio-cultural perspective. Design experiments are particularly called for, because the problem of sustainability is ill-structured—the elements are unknown, multiple solutions exist, multiple evaluation criteria apply, and stakeholders' different judgments and

beliefs should be resolved with interpersonal activities. Often sustainability problems are combinations of *Rule-Using, Story, Decision-Making, Diagnosis-Solution, Case Analysis, Dilemma, Design* and more types of problems as they are defined in Jonassen (2000: 66-67).

For such problems, design experiments can work for generating shared knowledge among stakeholders, understanding current consumer perceptions and behaviours, finding appropriate ways to represent the problems for different audiences, and finally producing original solutions. Problem representation, as Jonassen emphasized in the same paper (2000: 69), is deciding what to “provide or withhold” among many clues and contexts to define the problem space, and it is also deciding how the problem would look; design experiments can encourage the audiences see the problem from key perspectives and focus on major issues first and foremost. The experiments can be also designed as aesthetic, multi-modal communication platforms with which emotional and sensitive aspects of food consumption can be addressed.

For future studies, the authors suggest three directions of research endeavours: First, to identify current misunderstanding of sustainability related scientific concepts and socio-cultural elements of food consumption, build interactive public installations to collect quantitative and qualitative data on Finnish consumers’ own definitions of the scientific concepts/ sustainable behaviours, what Finns eat in various occasions and social settings, and connotative meanings of food items in Finnish language. Recurring patterns in the collected data will point to common misconceptions and ungrounded perceptions as starting points for improvement.

Second, to identify current problem behaviours, data collection systems for individuals’ food behaviours are called for, but the systems should work without the hassle of typing in what you buy/eat all the time. Such tools can be developed either on wearable or mobile platforms, or at grocery store checkout stands, if Finnish food providers and consumers agree to collect consumers’ grocery shopping data. Consumers can receive feedbacks based on their weekly, monthly, and yearly history, and they will see the tangibility of environmental impacts they have caused.

Third, to approach audiences with different knowledge, perspectives and understandings as mentioned in the first part of this paper, exploring original ways to represent food sustainability issues are called for. Consumers with different priorities should be presented with different opportunities/benefits. The authors are looking forward to suggestions and collaboration opportunities from design research community on future studies.

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